Colour Television **Chassis**

TPM4.1E

LA

Service
Service
Service



18850_000_100107.eps
100209

Service Manual

Contents

Contents		Page	

Published by WEP/WS 1161 BU TV Consumer Care, the Netherlands Subject to modification EN 3122 785 18873
2011-Jan-21

PHILIPS

1. Revision List

Manual xxxx xxx xxxx.0
- First release.

Manual xxxx xxx xxxx.1
- Added “/60” models to Table 6-3.

Manual xxxx xxx xxxx.2
- **Chapter 4:** added information on returning a defect LCD panel.
- **Chapter 6:** updated Option code overview.

Manual xxxx xxx xxxx.3
- Added 32PFL3205/12 to the manual.

2. Technical Specifications, Connections

Index of this chapter:

Notes:
- Figures can deviate due to the different set executions.
- Specifications are indicative (subject to change).

2.1 Technical Specifications

For on-line product support please use the links in. Here is product information available, as well as getting started, user manuals, frequently asked questions and software & drivers.

Table 2-1 Described Model Numbers:

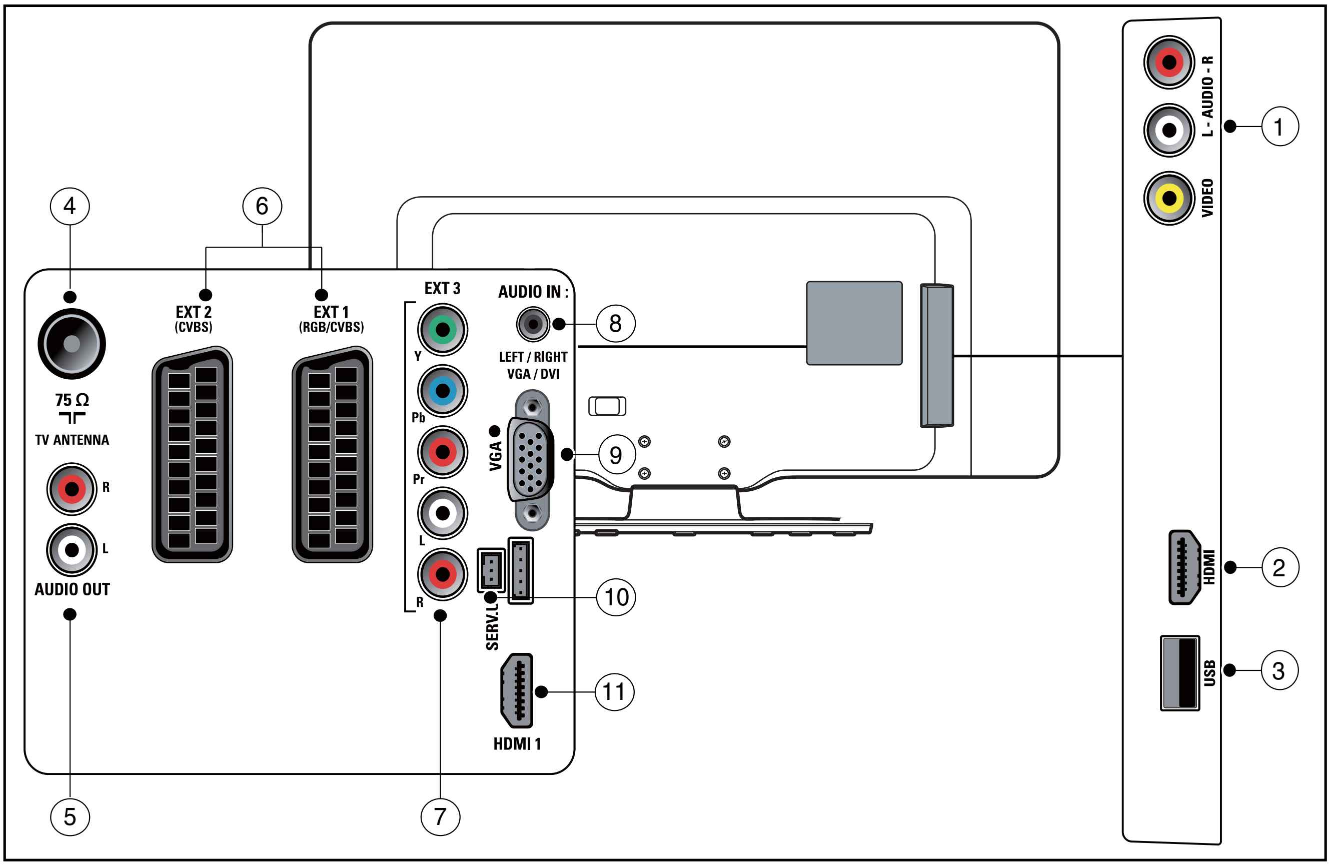
Model Number	Styling	Published in
32PFL3205/12	Dali	3122 785 18873
32PFL3605/12	Dali	3122 785 18870
32PFL3605/60	Dali	3122 785 18870
42PFL3605/12	Dali	3122 785 18870
42PFL3605/60	Dali	3122 785 18870

Note: The given Model Numbers are subject to change.

2.2 Directions for Use

Directions for use can be downloaded from the following websites:
http://www.philips.com/support
http://www.p4c.philips.com

2.3 Connections



18870_001_100107.eps
100308

Figure 2-1 Connection overview

Note: The following connector colour abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, Ye= Yellow.

2.3.1 Side Connections

1 - Cinch: Video CVBS - In, Audio - In

Ye - Video CVBS	1 V_{PP} / 75 Ω	
Rd - Audio R	0.5 V_{RMS} / 10 kΩ	
Wh - Audio L	0.5 V_{RMS} / 10 kΩ	

2 - HDMI: Digital Video, Digital Audio - In

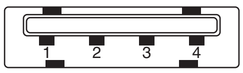


10000_017_090121.eps
090428

Figure 2-2 HDMI (type A) connector

1	- D2+	Data channel
2	- Shield	Gnd
3	- D2-	Data channel
4	- D1+	Data channel
5	- Shield	Gnd
6	- D1-	Data channel
7	- D0+	Data channel
8	- Shield	Gnd
9	- D0-	Data channel
10	- CLK+	Data channel
11	- Shield	Gnd
12	- CLK-	Data channel
13	- n.c.	
14	- n.c.	
15	- DDC_SCL	DDC clock
16	- DDC_SDA	DDC data
17	- Ground	Gnd
18	- +5V	
19	- HPD	Hot Plug Detect
20	- Ground	Gnd

3 - USB2.0



10000_022_090121.eps
090121

Figure 2-3 USB (type A)

1	- +5V	
2	- Data (-)	
3	- Data (+)	
4	- Ground	Gnd

2.3.2 Rear Connections

4 - TV ANTENNA - In

Signal input from an antenna, cable or satellite.

5 - Audio - Out: Left / Right

Wh - Audio - L	0.5 V_{RMS} / 10 kΩ	
Rd - Audio - R	0.5 V_{RMS} / 10 kΩ	

6 - EXT1 - 2: Video RGB/YC - In, CVBS - In/Out, Audio - In/Out

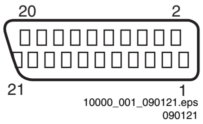


Figure 2-4 SCART connector

1	- Audio R	0.5 V_{RMS} / 1 kΩ
2	- Audio R	0.5 V_{RMS} / 10 kΩ
3	- Audio L	0.5 V_{RMS} / 1 kΩ
4	- Ground Audio	Gnd
5	- Ground Blue	Gnd
6	- Audio L	0.5 V_{RMS} / 10 kΩ
7	- Video Blue/C-out	0.7 V_{PP} / 75 Ω
8	- Function Select	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3
9	- Ground Green	Gnd
10	- n.c.	
11	- Video Green	0.7 V_{PP} / 75 Ω
12	- n.c.	
13	- Ground Red	Gnd
14	- Ground P50	Gnd
15	- Video Red/C	0.7 V_{PP} / 75 Ω
16	- Status/FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 Ω
17	- Ground Video	Gnd
18	- Ground FBL	Gnd
19	- Video CVBS	1 V_{PP} / 75 Ω
20	- Video CVBS/Y	1 V_{PP} / 75 Ω
21	- Shield	Gnd

7 - EXT3: Video YPbPr - In, Audio - In

Gn	- Video - Y	1 V_{PP} / 75 W
Bu	- Video - Pb	0.7 V_{PP} / 75 W
Rd	- Video - Pr	0.7 V_{PP} / 75 W
Wh	- Audio - L	0.5 V_{RMS} / 10 kW
Rd	- Audio - R	0.5 V_{RMS} / 10 kW

8 - Audio - In: Left / Right, VGA

Gn	- Audio L/R in	0.5 V_{RMS} / 10 kW

9 - PC IN:VGA

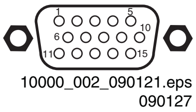


Figure 2-5 VGA connector

1	- Video Red	0.7 V_{PP} / 75 Ω
2	- Video Green	0.7 V_{PP} / 75 Ω
3	- Video Blue	0.7 V_{PP} / 75 Ω
4	- n.c.	
5	- Ground	Gnd
6	- Ground Red	Gnd
7	- Ground Green	Gnd
8	- Ground Blue	Gnd
9	- +5V_{DC}	+5 V
10	- Ground Sync	Gnd
11	- Ground Red	Gnd
12	- DDC_SDA	DDC data
13	- H-sync	0 - 5 V
14	- V-sync	0 - 5 V
15	- DDC_SCL	DDC clock

10 - Service / UART

1	- Ground	Gnd
2	- UART_TX	Transmit
3	- UART_RX	Receive

11 - HDMI 1: Digital Video, Digital Audio - In

See 2 - HDMI: Digital Video, Digital Audio - In.

2.4 Chassis Overview

Refer to 9. Block Diagrams for PWB/CBA locations.

3. Precautions, Notes, and Abbreviation List

Index of this chapter:

3.1 Safety Instructions

Safety regulations require the following **during** a repair:

- Connect the set to the Mains/AC Power via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains/AC Power lead for external damage.
- Check the strain relief of the Mains/AC Power cord for proper function.
- Check the electrical DC resistance between the Mains/AC Power plug and the secondary side (only for sets that have a Mains/AC Power isolated power supply):
  1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC Power plug.
  2. Set the Mains/AC Power switch to the “on” position (keep the Mains/AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
  4. Switch “off” the set, and remove the wire between the two pins of the Mains/AC Power plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

3.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched “on”.
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

3.3 Notes

3.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⏚), depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with (⏉) and without (⏉̸) aerial signal. Measure the voltages in the power supply section both in normal operation (⏀) and in stand-by (⏻). These values are indicated by means of the appropriate symbols.

3.3.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kΩ).
- Resistor values with no multiplier may be indicated with either an “E” or an “R” (e.g. 220E or 220R indicates 220 Ω).
- All capacitor values are given in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An “asterisk” (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed on the Philips Spare Parts Web Portal.

3.3.3 Spare Parts

For the latest spare part overview, consult your Philips Spare Part web portal.

3.3.4 BGA (Ball Grid Array) ICs

Introduction

For more information on how to handle BGA devices, visit this URL: http://www.atyourservice-magazine.com. Select “Magazine”, then go to “Repair downloads”. Here you will find Information on how to deal with BGA-ICs.

BGA Temperature Profiles

For BGA-ICs, you **must** use the correct temperature-profile. Where applicable and available, this profile is added to the IC Data Sheet information section in this manual.

3.3.5 Lead-free Soldering

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
  – To reach a solder-tip temperature of at least 400°C.
  – To stabilize the adjusted temperature at the solder-tip.
  – To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilized at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch “off” unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly **to avoid** mixed regimes. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.

3.3.6 Alternative BOM identification

It should be noted that on the European Service website, “Alternative BOM” is referred to as “Design variant”.

The **third digit** in the serial number (example: AG**2**B0335000001) indicates the number of the alternative B.O.M. (Bill Of Materials) that has been used for producing the specific TV set. In general, it is possible that the same TV model on the market is produced with e.g. two different types of displays, coming from two different suppliers. This will then result in sets which have the same CTN (Commercial Type Number; e.g. 28PW9515/12) but which have a different B.O.M. number.
By looking at the third digit of the serial number, one can identify which B.O.M. is used for the TV set he is working with.
If the third digit of the serial number contains the number “1” (example: AG**1**B033500001), then the TV set has been manufactured according to B.O.M. number 1. If the third digit is a “2” (example: AG**2**B0335000001), then the set has been produced according to B.O.M. no. 2. This is important for ordering the correct spare parts!
For the third digit, the numbers 1...9 and the characters A...Z can be used, so in total: 9 plus 26= 35 different B.O.M.s can be indicated by the third digit of the serial number.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 1 and 2 refer to the production centre (e.g. AG is Bruges), digit 3 refers to the B.O.M. code, digit 4 refers to the Service version change code, digits 5 and 6 refer to the production year, and digits 7 and 8 refer to production week (in example below it is 2006 week 17). The 6 last digits contain the serial number.



10000_024_090121.eps
100105

Figure 3-1 Serial number (example)

3.3.7 Board Level Repair (BLR) or Component Level Repair (CLR)

If a board is defective, consult your repair procedure to decide if the board has to be exchanged or if it should be repaired on component level.
If your repair procedure says the board should be exchanged completely, do not solder on the defective board. Otherwise, it cannot be returned to the O.E.M. supplier for back charging!

3.3.8 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages**. While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3.4 Abbreviation List

0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16 : 9 format, 12 = play 4 : 3 format
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeps the original aspect ratio
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ASF	Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars without discarding video information
ATSC	Advanced Television Systems Committee, the digital TV standard in the USA
ATV	See Auto TV
Auto TV	A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way
AV	External Audio Video
AVC	Audio Video Controller
AVIP	Audio Video Input Processor
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BDS	Business Display Solutions (iTV)
BLR	Board-Level Repair
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries
B-TXT	Blue TeleteXT
C	Centre channel (audio)
CEC	Consumer Electronics Control bus: remote control bus on HDMI connections
CL	Constant Level: audio output to connect with an external amplifier
CLR	Component Level Repair
ComPair	Computer aided rePair
CP	Connected Planet / Copy Protection
CSM	Customer Service Mode
CTI	Color Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronization
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DCM	Data Communication Module. Also referred to as System Card or Smartcard (for iTV).
DDC	See “E-DDC”
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz
DFI	Dynamic Frame Insertion

DFU	Directions For Use: owner's manual
DMR	Digital Media Reader: card reader
DMSD	Digital Multi Standard Decoding
DNM	Digital Natural Motion
DNR	Digital Noise Reduction: noise reduction feature of the set
DRAM	Dynamic RAM
DRM	Digital Rights Management
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for service technicians
DTCP	Digital Transmission Content Protection; A protocol for protecting digital audio/video content that is traversing a high speed serial bus, such as IEEE-1394
DVB-C	Digital Video Broadcast - Cable
DVB-T	Digital Video Broadcast - Terrestrial
DVD	Digital Versatile Disc
DVI(-d)	Digital Visual Interface (d= digital only)
E-DDC	Enhanced Display Data Channel (VESA standard for communication channel and display). Using E-DDC, the video source can read the EDID information form the display.
EDID	Extended Display Identification Data (VESA standard)
EEPROM	Electrically Erasable and Programmable Read Only Memory
EMI	Electro Magnetic Interference
EPG	Electronic Program Guide
EPLD	Erasable Programmable Logic Device
EU	Europe
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FDS	Full Dual Screen (same as FDW)
FDW	Full Dual Window (same as FDS)
FLASH	FLASH memory
FM	Field Memory or Frequency Modulation
FPGA	Field-Programmable Gate Array
FTV	Flat TeleVision
Gb/s	Giga bits per second
G-TXT	Green TeleteXT
H	H_sync to the module
HD	High Definition
HDD	Hard Disk Drive
HDCP	High-bandwidth Digital Content Protection: A “key” encoded into the HDMI/DVI signal that prevents video data piracy. If a source is HDCP coded and connected via HDMI/DVI without the proper HDCP decoding, the picture is put into a “snow vision” mode or changed to a low resolution. For normal content distribution the source and the display device must be enabled for HDCP “software key” decoding.
HDMI	High Definition Multimedia Interface
HP	HeadPhone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I^2C	Inter IC bus
I^2D	Inter IC Data bus
I^2S	Inter IC Sound bus
IF	Intermediate Frequency
IR	Infra Red
IRQ	Interrupt Request
ITU-656	The ITU Radio communication Sector (ITU-R) is a standards body subcommittee of the International Telecommunication Union relating to radio communication. ITU-656 (a.k.a. SDI), is a digitized video format used for broadcast grade video. Uncompressed digital component or digital composite signals can be used. The SDI signal is self-synchronizing, uses 8 bit or 10 bit data words, and has a maximum data rate of 270 Mbit/s, with a minimum bandwidth of 135 MHz.
ITV	Institutional TeleVision; TV sets for hotels, hospitals etc.
LS	Last Status; The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customer's preferences
LATAM	Latin America
LCD	Liquid Crystal Display
LED	Light Emitting Diode
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
LPL	LG.Philips LCD (supplier)
LS	Loudspeaker
LVDS	Low Voltage Differential Signalling
Mbps	Mega bits per second
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
MHEG	Part of a set of international standards related to the presentation of multimedia information, standardised by the Multimedia and Hypermedia Experts Group. It is commonly used as a language to describe interactive television services
MIPS	Microprocessor without Interlocked Pipeline-Stages; A RISC-based microprocessor
MOP	Matrix Output Processor
MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device
MPEG	Motion Pictures Experts Group
MPIF	Multi Platform InterFace
MUTE	MUTE Line
MTV	Mainstream TV: TV-mode with Consumer TV features enabled (iTV)
NC	Not Connected
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
NTC	Negative Temperature Coefficient, non-linear resistor
NTSC	National Television Standard Committee. Color system mainly used in North America and Japan. Color carrier NTSC M/N= 3.579545 MHz, NTSC 4.43= 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
NVM	Non-Volatile Memory: IC containing TV related data such as alignments
O/C	Open Circuit
OSD	On Screen Display
OAD	Over the Air Download. Method of software upgrade via RF transmission. Upgrade software is broadcasted in TS with TV channels.
OTC	On screen display Teletext and Control; also called Artistic (SAA5800)
P50	Project 50: communication protocol between TV and peripherals
PAL	Phase Alternating Line. Color system mainly used in West Europe (color carrier= 4.433619 MHz) and South America (color carrier PAL M=

	3.575612 MHz and PAL N= 3.582056 MHz)
PCB	Printed Circuit Board (same as "PWB")
PCM	Pulse Code Modulation
PDP	Plasma Display Panel
PFC	Power Factor Corrector (or Pre-conditioner)
PIP	Picture In Picture
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency
POD	Point Of Deployment: a removable CAM module, implementing the CA system for a host (e.g. a TV-set)
POR	Power On Reset, signal to reset the uP
PSDL	Power Supply for Direct view LED backlight with 2D-dimming
PSL	Power Supply with integrated LED drivers
PSLS	Power Supply with integrated LED drivers with added Scanning functionality
PTC	Positive Temperature Coefficient, non-linear resistor
PWB	Printed Wiring Board (same as "PCB")
PWM	Pulse Width Modulation
QRC	Quasi Resonant Converter
QTNR	Quality Temporal Noise Reduction
QVCP	Quality Video Composition Processor
RAM	Random Access Memory
RGB	Red, Green, and Blue. The primary color signals for TV. By mixing levels of R, G, and B, all colors (Y/C) are reproduced.
RC	Remote Control
RC5 / RC6	Signal protocol from the remote control receiver
RESET	RESET signal
ROM	Read Only Memory
RSDS	Reduced Swing Differential Signalling data interface
R-TXT	Red TeleteXT
SAM	Service Alignment Mode
S/C	Short Circuit
SCART	Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs
SCL	Serial Clock I^2C
SCL-F	CLock Signal on Fast I^2C bus
SD	Standard Definition
SDA	Serial Data I^2C
SDA-F	DAta Signal on Fast I^2C bus
SDI	Serial Digital Interface, see "ITU-656"
SDRAM	Synchronous DRAM
SECAM	SEequence Couleur Avec Mémoire. Color system mainly used in France and East Europe. Color carriers= 4.406250 MHz and 4.250000 MHz
SIF	Sound Intermediate Frequency
SMPS	Switched Mode Power Supply
SoC	System on Chip
SOG	Sync On Green
SOPS	Self Oscillating Power Supply
SPI	Serial Peripheral Interface bus; a 4-wire synchronous serial data link standard
S/PDIF	Sony Philips Digital InterFace
SRAM	Static RAM
SRP	Service Reference Protocol
SSB	Small Signal Board
SSC	Spread Spectrum Clocking, used to reduce the effects of EMI
STB	Set Top Box
STBY	STand-BY
SVGA	800 × 600 (4:3)
SVHS	Super Video Home System
SW	Software
SWAN	Spatial temporal Weighted Averaging Noise reduction
SXGA	1280 × 1024
TFT	Thin Film Transistor
THD	Total Harmonic Distortion
TMDS	Transmission Minimized Differential Signalling
TS	Transport Stream
TXT	TeleteXT
TXT-DW	Dual Window with TeleteXT
UI	User Interface
uP	Microprocessor
UXGA	1600 × 1200 (4:3)
V	V-sync to the module
VESA	Video Electronics Standards Association
VGA	640 × 480 (4:3)
VL	Variable Level out: processed audio output toward external amplifier
VSB	Vestigial Side Band; modulation method
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
WXGA	1280 × 768 (15:9)
XTAL	Quartz crystal
XGA	1024 × 768 (4:3)
Y	Luminance signal
Y/C	Luminance (Y) and Chrominance (C) signal
YPbPr	Component video. Luminance and scaled color difference signals (B-Y and R-Y)
YUV	Component video

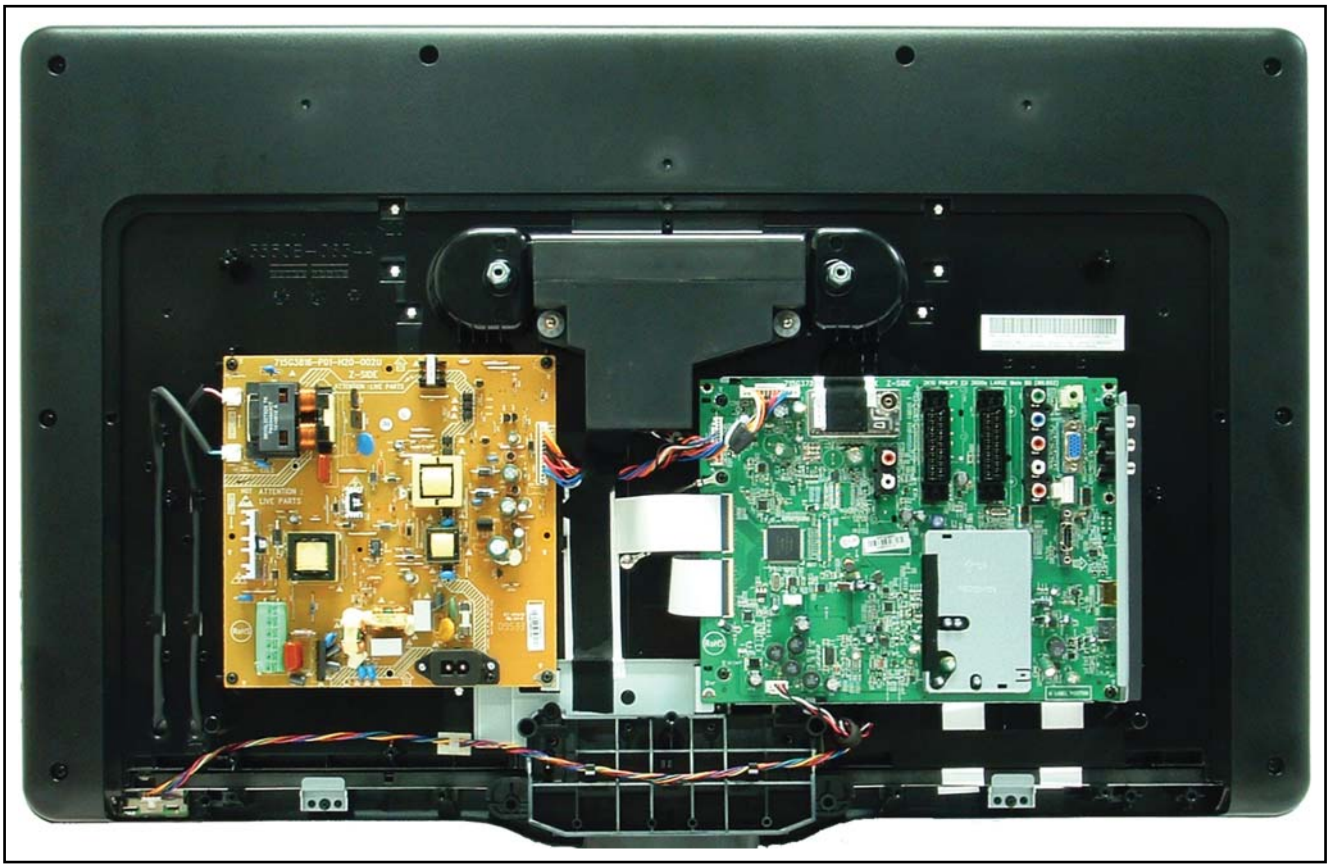
4. Mechanical Instructions

Index of this chapter:

Notes:

- Figures below can deviate slightly from the actual situation, due to the different set executions.

4.1 Cable Dressing



18870_101_100204.eps
100204

Figure 4-1 Cable dressing (32")



18870_100_100107.eps
100308

Figure 4-2 Cable dressing (42")

4.2 Service Positions

For easy servicing of a TV set, the set should be put face down on a soft flat surface, foam buffers or other specific workshop tools. Ensure that a stable situation is created to perform measurements and alignments. When using foam bars take care that these always support the cabinet and **never** only the display. **Caution:** Failure to follow these guidelines can seriously damage the display!
Ensure that ESD safe measures are taken.

4.3 Assy/Panel Removal 32"

4.3.1 Rear Cover

Warning: Disconnect the mains power cord before removing the rear cover.

1. Remove the fixation screws that secure the rear cover.
2. Lift the rear cover from the TV. Make sure that wires and flat foils are not damaged while lifting the rear cover from the set.

4.3.2 Small Signal Board (SSB)

Caution: it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the SSB.

1. Release the clips from both the LVDS Flat Foil connectors. **Caution:** be careful, as these are very fragile connectors! Take the flat foils out of their connectors.
2. Unplug all other connectors.
3. Release the tape near the bottom side of the set from the LCD panel.
4. Remove all other fixation screws from the SSB.
5. Take out the SSB together with its shielding.
6. Remove the screws near the HDMI and L/R audio connectors.
7. The SSB can now be shifted sidewards away from the side connector cover and take out of the shielding. **Caution:** be careful not to damage the thermal pad between the SSB and shielding.

4.3.3 Power Supply Unit (PSU)

Caution: it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the PSU.

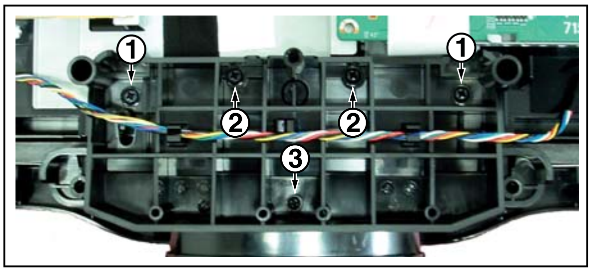
1. Unplug power connector from the SSB.
2. Unplug all other connectors from the PSU.
3. Remove all fixation screws from the PSU.
4. The PSU can now be taken out of the set.

When defective, replace the whole unit.

4.3.4 Stand removal

See Figure 4-3.
Caution: it is mandatory to remount all different screws at their original position during re-assembly. Be sure to put the set in the Service Position.

1. Remove the SSB as described earlier up till step 5 and including step 5.
2. Remove the fixation screws [1], (M3).
3. Remove the fixation screws [2], (M4).
4. Remove the fixation screws [3], (Parker).
5. Take out the stand.



18850_102_100203.eps
100203

Figure 4-3 Stand (32")

4.3.5 Speakers

1. Unplug the speaker connector from the SSB and remove the wire wrap from this cable.
2. Remove the fixation screws from the speaker.
3. Take the speaker out.

When defective, replace the whole unit.

4.3.6 Stand support plate

1. Release the IR/LED/Keyboard Control cable from its clamps and put it aside.
2. Remove the SSB as described earlier.
3. Remove the PSU as described earlier.
4. Remove the Stand as described earlier.
5. Release the tape and take out of the set.

4.3.7 IR/LED Board

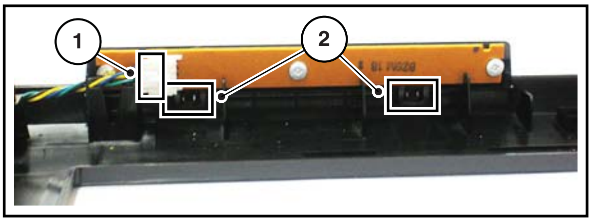
1. Release the IR/LED/Keyboard Control cable from its clamps.
2. Remove the fixation screw in the middle-bottom of the stand that secures the stand with the bezel, see Figure 4-3 [3].
3. Remove the clips at the bottom that secure the LCD panel with the bezel.
4. Remove the fixation screws that secure the LCD panel with the bezel.
5. Remove the bezel from the set.
6. Unplug the connectors from the IR/LED board.
7. Release the clips that hold the board and take it from the bezel.

When defective, replace the whole unit.

4.3.8 Keyboard Control Panel

1. Release the IR/LED/Keyboard Control cable from its clamps.
2. Remove the fixation screw in the middle-bottom of the stand that secures the stand with the bezel, see Figure 4-3 [3].
3. Remove the clips at the bottom that secure the LCD panel with the bezel.
4. Remove the fixation screws that secure the LCD panel with the bezel.
5. Remove the bezel from the set.
6. Unplug the connectors from the IR/LED board.
7. See Figure 4-4, unplug the connector [1] from the Keyboard Control Panel.
8. Release the clips that secure the Keyboard Control Panel [2].

When defective, replace the whole unit.



18850_104_100203.eps
100203

Figure 4-4 Keyboard Control Panel (32")

4.3.9 LCD Panel

1. Remove the SSB as described earlier.
2. Remove the PSU as described earlier.
3. Remove the speaker as described earlier.
4. Remove the stand as described earlier.
5. Remove the Stand support as described earlier.
6. Remove the clips at the bottom that secure the LCD panel with the bezel.
7. Remove the fixation screws that secure the LCD panel with the bezel.
8. Lift the LCD Panel from the bezel.

When defective, replace the whole unit.

4.4 Assembly/Panel Removal 42"

4.4.1 Rear Cover

Warning: Disconnect the mains power cord before removing the rear cover.

1. Remove the fixation screws that secure the rear cover.
2. Lift the rear cover from the TV. Make sure that wires and flat foils are not damaged while lifting the rear cover from the set.

4.4.2 Small Signal Board (SSB)

Caution: it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the SSB.

1. Release the clips from both the LVDS Flat Foil connectors. **Caution:** be careful, as these are very fragile connectors! Take the flat foils out of their connectors.
2. Unplug all other connectors.
3. Release the tape near the tuner from the LCD panel.
4. Release the tape near the processor shielding from the LCD panel.
5. Remove the fixation screw that connects the ground cable.
6. Remove all other fixation screws from the SSB.
7. Take out the SSB together with its shielding.
8. Remove the screws near the HDMI and L/R audio connectors.
9. The SSB can now be shifted sidewards away from the side connector cover and take out of the shielding. **Caution:** be careful not to damage the thermal pad between the SSB and shielding.

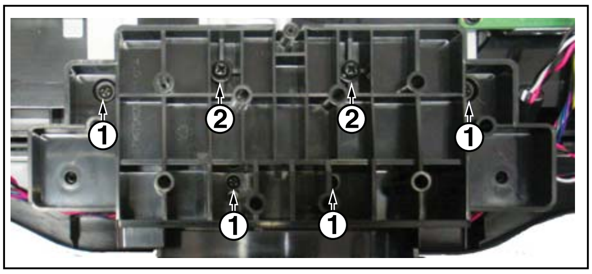
4.4.3 Power Supply Unit (PSU)

Caution: it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the PSU.
1. Unplug power connector from the SSB and take the cable out of the cable clamp.
2. Unplug all other connectors from the PSU.
3. Remove all fixation screws from the PSU.
4. The PSU can now be taken out of the set.

When defective, replace the whole unit.

4.4.4 Stand removal

See Figure 4-5.
Caution: it is mandatory to remount all different screws at their original position during re-assembly. Be sure to put the set in the Service Position.
1. Remove the fixation screws [1], (Parker).
2. Remove the fixation screws [2], (M4).
3. Take out the stand.



18850_105_100203.eps
100203

Figure 4-5 Stand (42")

4.4.5 Speakers

1. Unplug the speaker connector from the SSB.
2. Remove the stand, as described earlier.
3. Take the speakers out together with their casing.

When defective, replace the whole unit.

4.4.6 Stand support plate

1. Remove the stand as described earlier.
2. Remove the SSB as described earlier.
3. Remove the PSU as described earlier.
4. Remove all fixation screws from the stand support plate and take it out of the set.

4.4.7 IR/LED Board

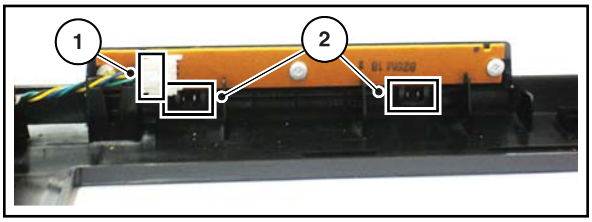
1. Remove the stand as described earlier.
2. Remove the speakers as described earlier.
3. Remove the SSB as described earlier.
4. Remove the clips at the bottom that secure the LCD panel with the bezel.
5. Remove the fixation screws that secure the LCD panel with the bezel.
6. Lift the LCD Panel from the bezel.
7. Unplug the connectors from the IR/LED board.
8. Release the clips that hold the board and take it from the bezel.

When defective, replace the whole unit.

4.4.8 Keyboard Control Panel

See Figure 4-6.
1. Remove the stand as described earlier.
2. Remove the speakers as described earlier.
3. Remove the SSB as described earlier.
4. Remove the clips that secure the LCD panel with the bezel.
5. Remove the fixation screws that secure the LCD panel with the bezel.
6. Lift the LCD Panel from the bezel.
7. Unplug the connector [1] from the Keyboard Control Panel.
8. Release the clips that secure the Keyboard Control Panel [2].

When defective, replace the whole unit.



18850_104_100203.eps
100203

Figure 4-6 Keyboard Control Panel (42")

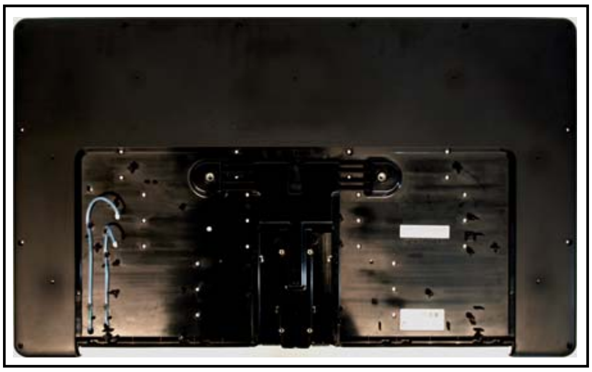
4.4.9 LCD Panel

1. Remove the stand as described earlier.
2. Remove the speakers as described earlier.
3. Remove the SSB as described earlier.
4. Remove the PSU as described earlier.
5. Remove the Stand support as described earlier.
6. Remove the clips that secure the LCD panel with the bezel.
7. Remove the fixation screws that secure the LCD panel with the bezel.
8. Lift the LCD Panel from the bezel.

When defective, replace the whole unit.

4.5 Returning a defect LCD panel

To return a defect LCD panel to the factory, all boards, cabling, mechanical supports, shieldings, clamps, spacers, the bezel and tapes have to be removed from the panel, see Figure 4-7. Be sure to carefully pack the area's of the panel that are visible during normal use.



18931_100_100510.eps
100510

Figure 4-7 LCD panel

4.6 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

Notes:

- While re-assembling, make sure that all cables are placed and connected in their original position.
  See Figure 4-1 and Figure 4-2.
- Pay special attention not to damage the EMC foams on the SSB shields. Ensure that EMC foams are mounted correctly.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

5.1 Service Modes

The Customer Service Mode (CSM) is used for communication between the call centre and the customer, while the Service Alignment Mode (SAM) offers several features for the service technician.

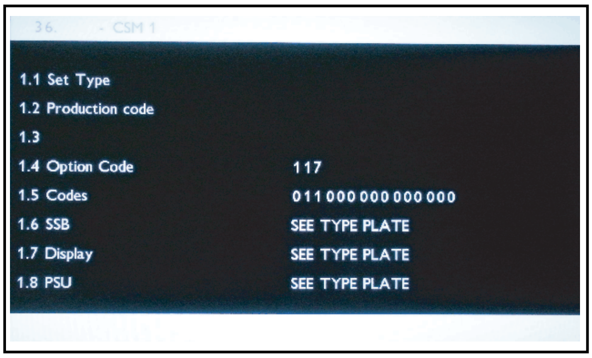
This chassis also offers the option of using ComPair, a hardware interface between a computer and the TV chassis. It offers the abilities of structured troubleshooting, error code reading, and software version read-out for all chassis.

5.1.1 Customer Service Mode (CSM)

Purpose
The Customer Service Mode shows error codes and information on the TV's operation settings.The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set.This helps the call centre to diagnose problems and failures in the TV set before making a service call.
The CSM is a read-only mode; therefore, modifications are not possible in this mode.

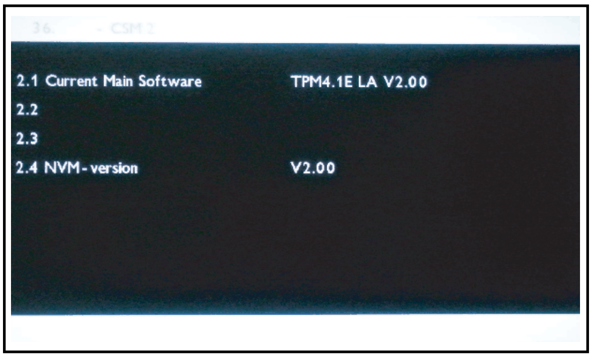
How to Activate CSM
Key in the code “123654” via the standard RC transmitter.

Note: Activation of the CSM is only possible if there is no (user) menu on the screen!



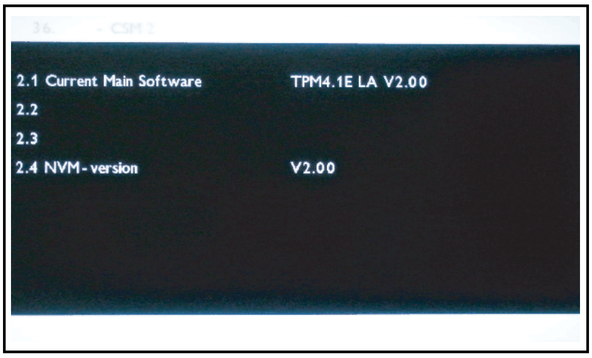
18870_201_100209.eps
100310

Figure 5-1 CSM Menu [1/3]



18870_211_100310.eps
100310

Figure 5-2 CSM Menu [2/3]



18870_211_100310.eps
100310

Figure 5-3 CSM Menu [3/3]

How to Navigate
By means of the “CURSOR-DOWN/UP” knob (or the scroll wheel) on the RC-transmitter, can be navigated through the menus.

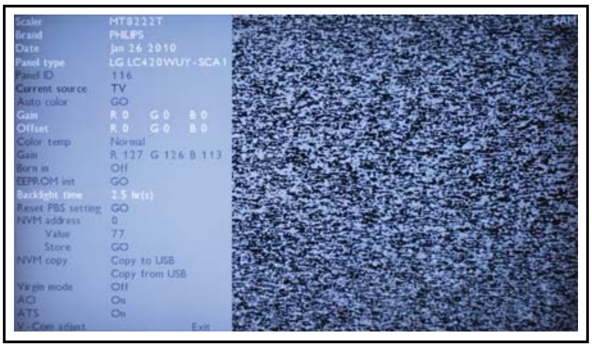
General
- **1.1 Set Type** NVM read/write (max. 16 characters).
- **1.2 Production code** NVM read/write (max. 16 characters).
- **1.4 Option Code** Store in NVM (set feature grouping as option) panel code.
- **1.5 Codes** Error code Layer 2. Store in NVM. 10 error buffers: 000 = No problem, 011 = I^2C bus error, 012 = tuner error, 013 = panel.
- **1.6 SSB** 12NC NVM read/write (12 characters).
- **1.7 Display** 12NC NVM read/write (12 characters).
- **1.8 PSU** 12NC NVM read/write (12 characters).
- **2.1 Current Main SW** Detects and displays software version.
- **2.4 NVM version** Detects and displays software version.
- **3.1 Signal Quality/Present** analog/digital signal strength.
- **3.2 TV lock** Detects and displays.
- **3.3 HDCP keys** Detects and displays.
- **3.6 HDMI audio format input stream** Per supported format e.g. Dolby TrueHD, DTS-HD Master Audio, MPCM.
- **3.7 HDMI video format input stream** Per Supported format. e.g. 576i 50 Hz, 576p 50 Hz, 720p 50 Hz, 1080i 50 Hz, 1080p 50 Hz

How to Exit CSM
Press “MENU” on the RC-transmitter.

5.1.2 Service Alignment Mode (SAM)

How to enter
To enter the factory mode, use the following method:
- Press the following key sequence on the remote control transmitter: “062596” directly followed by the “INFO” button.

After entering the factory mode, the following screen is visible on the top and right of the panel.



18870_202_100209.eps
100209

Figure 5-4 Example of SAM

Table 5-1 Contents of SAM

Action Items		Range	Default Value 32"	Default Value 42"	Description
Scaler			MT8222T	MT8222T	Scaler IC type
Brand			PHILIPS	PHILIPS	Set brand
Date			Jan 26 2010	Jan 26 2010	example of released Software date
Panel type			LG LC320WUY-SCA1	LG LC420WUY-SCA1	Panel type number
Panel ID			117	116	Panel ID identify
Current source			TV	TV	Selected source
Auto color			GO	GO	PC: any pattern has black and white YPbPr: SMPTE bar (colour bar), any timing.
Gain		0 - 255	R 0 G 0 B 0	R 0 G 0 B 0	Analogue to Digital Converter Gain for each colour, AutoColor affects this and it value is depends on the input
Offset		0 - 255	R 0 G 0 B 0	R 0 G 0 B 0	Analogue to Digital Converter Offset for each colour, AutoColor affects this and it value is depends on the input
Color temp			Normal	Normal	colour temperature settings, normal, cool, or warm
Gain		0 - 255	R 127 G 124 B119	R 127 G 126 B113	Back-End Scaler R G B Gain NVM hasYPbPr NORMAL, WARM, COOL, CUSTOMER four sets. Other source use offset with hardcoding
Burn in			Off	Off	Resets the set to manufacturer's mode
EEPROM init			GO	GO	Resets the EEPROM to initial mode
Backlight time			1 hr(s)	1 hr(s)	Setsthe backlight time
Reset PBS setting			GO	GO	Resets the PBS setting
NVM	address		0	0	Example of an NVM address
	value		77	77	Example of an NVM value
	store		GO	GO	Stores the NVM setting
NVM copy			Copy to USB	Copy to USB	Use this to copy the NVM data from the TV to the USB
			Copy from USB	Copy from USB	Use this to copy the NVM data from the USB to the TV
Virgin mode			Off	Off	Resets the set to its initial status
ACI			On	On	ACI “On” or “Off”
ATS			On	On	ATS “On” or “Off”
V - Com adjust		Press OK	V-Com adjust Pattren White GAM1 862 35E GMA2 821 335 GMA3 754 2F2 GMA4 638 27E GMA5 390 186 GMA6 270 10E GMA7 205 CD GMA8 162 A2 VCOM 455 1C7 Store Default init Yes Exit	V-Com adjust Pattren White GAM1 879 36F GMA2 834 342 GMA3 768 300 GMA4 649 289 GMA5 388 184 GMA6 261 105 GMA7 195 C3 GMA8 151 97 VCOM 417 1A1 Store Default init Yes Exit	Adjusts the V-Com setting
Exit		Press OK			Exit from factory mode

How to Navigate
With the up/down cursor keys can be used to navigate through the menu, while with the Left/Right cursor the values can be changed.

How to EXIT
Choose “EXIT”, and press the “OK” button.

5.2 Service Tools

5.2.1 ComPair

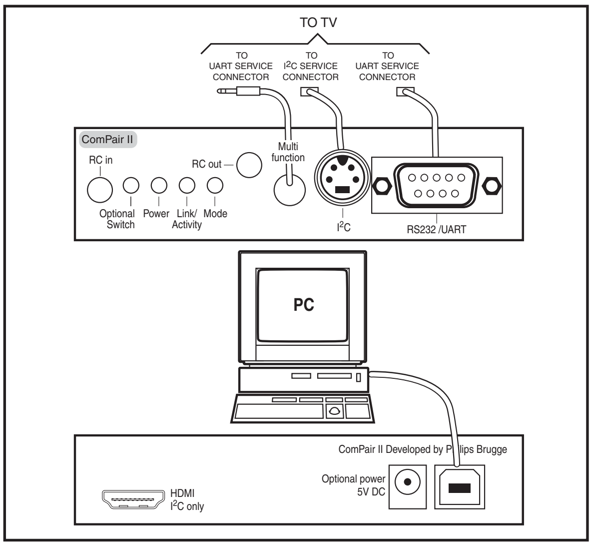
Introduction
ComPair (Computer Aided Repair) is a Service tool for Philips Consumer Electronics products. and offers the following:

1. ComPair helps to quickly get an understanding on how to repair the chassis in a short and effective way.
2. ComPair allows very detailed diagnostics and is therefore capable of accurately indicating problem areas. No knowledge on I^2C or UART commands is necessary, because ComPair takes care of this.
3. ComPair speeds up the repair time since it can automatically communicate with the chassis (when the uP is working) and all repair information is directly available.
4. ComPair features TV software upgrade possibilities.

Specifications
ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The ComPair II interface box is connected **to the PC** via an USB cable. For the TV chassis, the ComPair interface box and

the TV communicate via a bi-directional cable via the service connector(s).
The ComPair fault finding program is able to determine the problem of the defective television, by a combination of automatic diagnostics and an interactive question/answer procedure.

How to Connect
This is described in the chassis fault finding database in ComPair.



10000_036_090121.eps
091118

Figure 5-5 ComPair II interface connection

Caution: It is compulsory to connect the TV to the PC as shown in the picture above (with the ComPair interface in between), as the ComPair interface acts as a level shifter. If one connects the TV directly to the PC (via UART), ICs will be damaged!

How to Order
ComPair II order codes:
- ComPair II interface: 3122 785 91020.
- Programming software can be downloaded from the Philips Service portal.
- ComPair UART interface cable for TPM4.1x xx. 3122 785 90630.

Note: While having problems, contact the local support desk.

5.3 Software Upgrading

5.3.1 Introduction

Philips continuously tries to improve its products, and we recommend that you update the TV software when updates are available. Software update files can be obtained from your dealer or can be downloaded from the following websites:
http://www.philips.com/support

Preparing a portable memory for software upgrade
You require the following:
1. A personal computer connected to the Internet.
2. An archive utility that supports the ZIP-format (e.g. WinZip for Windows or StuffIt for Mac OS).
3. A USB flash drive (preferably empty).

Note:
1. Only FAT/DOS-formatted flash drives are supported.
2. Only use software update files that can be found on the http://www.philips.com/support web site.

5.3.2 Check the current TV software version

Before starting the software upgrade procedure, it is advised to check that what the current TV software:
1. Press the “Menu” button on your remote control.
2. Select “Setup” and press “OK”, then select [Software update] > [Current software].

If the current software version of your TV is the same as the latest update file found on http://www.philips.com/support, it is not necessary to update the TV software.

5.3.3 Download the latest software

1. Point your web browser to http://www.philips.com/support.
2. Find information and software related to your TV.
3. Select the latest software update file and download it to your PC.
4. Insert a USB flash drive into one of the USB ports of your PC.
5. Decompress the downloaded ZIP file and copy the “autorun.upg” to the root directory of the USB flash drive.

5.3.4 Update the TV software

1. Power off your TV and disconnect all memory devices.
2. Insert the USB flash drive that contains the software update file.
3. Switch on your TV, and TV will display the Main Menu upon detection of USB portable.
4. Select [Setup] and press OK. See Figure 5-6.
   Note: If the USB flash drive is not detected after power up, disconnect it and re-insert it.
5. Select [Software update] > [Local updates] and press OK. See Figure 5-7 and Figure 5-8.
6. When prompted, select [Cancel] or [OK] and press OK. See Figure 5-9.
7. To proceed, In next menu select [Start] and press OK to start software updates. See Figure 5-10.
8. Upgrading will now begins and the status of the updating progress will be displayed. See Figure 5-11.
9. When the TV software is updated, the TV automatically restarts and the TV starts up with the new software.



18870_203_100209.eps
100209

Figure 5-6 Update the TV software [1/6]



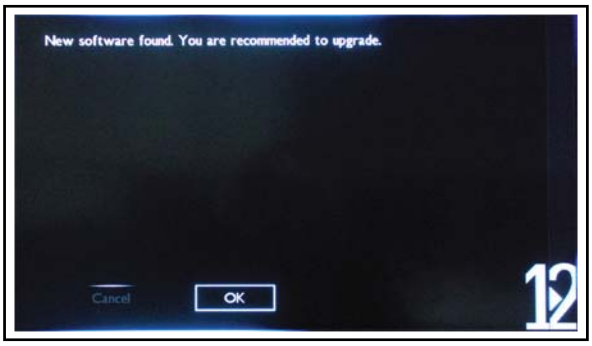
18870_204_100209.eps
100209

Figure 5-7 Update the TV software [2/6]



18870_205_100209.eps
100209

Figure 5-8 Update the TV software [3/6]



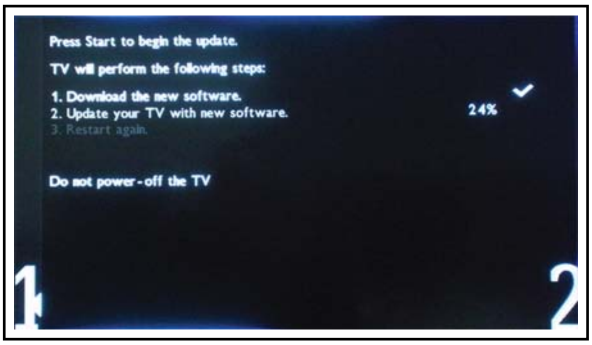
18870_206_100209.eps
100209

Figure 5-9 Update the TV software [4/6]



18870_207_100209.eps
100209

Figure 5-10 Update the TV software [5/6]



18870_208_100209.eps
100209

Figure 5-11 Update the TV software [6/6]

Notes:
- Do not remove the USB flash drive during the software update.
- If a power failure occurs during the update, do not remove the USB flash drive from the TV. The TV will continue the software update as soon as power comes back.
- If an error occurs during the update retry the procedure or contact your dealer.
- We do not recommend downgrading to an older version.
- Once the upgrade is finished, use your PC to remove the TV software from your USB portable memory.

5.4 Error Codes

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.

Basically there are three kinds of error codes:

Error Code	Event
000	No problem
011	I^2C bus error
012	Tuner error

5.5 Fault Finding and Repair Tips

5.5.1 Speakers

Make sure that the volume is set to minimum during disconnecting the speakers in the ON-state of the TV. The audio amplifier can be damaged by disconnecting the speakers during ON-state of the set!

5.5.2 Tuner

Attention: In case the tuner is replaced, always check the tuner options.

6. Alignments

Index of this chapter:

Note: The Service Alignment Mode (SAM) are described in chapter 5. Service Modes, Error Codes, and Fault Finding. Menu navigation is done with the CURSOR UP, DOWN, LEFT or RIGHT keys of the remote control transmitter.

6.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 195 - 264 V_{AC}, 50/60 ± 3 Hz.
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 15 minutes.
- Measure voltages and waveforms in relation to correct ground.
  Caution: It is not allowed to use heatsinks as ground.
- Test probe: R_i > 10 MΩ, C_i < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

6.2 Hardware Alignments

Not applicable.

6.3 TV Mode display adjust

6.3.1 White balance adjustment

Equipment Requirements:
Quantum Data Pattern Generator 801GD or 802G or 802R; Apply 720P/60 at the pattern TVBAR100.

Alignment method:
Set Smart picture as "personal" (Brightness = 50, Contrast = 50, Video contrast = 50, Colour = 50); Access to SAM first, then to enable AUTO_COLOR to get HD ADC OFFSET and HD ADC GAIN. Check whether 32 gray scales are distinguishable.

6.3.2 Colour Temperature Alignment

Apply full white pattern, select smart setting to be Personal (Brightness = 50, Contrast = 50, Video contrast = 50, and Colour = 50). Adjust SCALER GAIN R G B to reach W/D and luminance in SAM mode as below.
Select Color Temp in the SAM OSD. The 1931 CIE chromaticity (X, Y) coordinates must be adjusted according to Table 6-1.

Table 6-1 Reading with Minolta CA-110

Picture Temp	x	y
Normal	0.287 ± 0.005	0.296 ± 0.005
Cool	0.276 ± 0.005	0.282 ± 0.005
Warm	0.313 ± 0.005	0.329 ± 0.005

If you do not have a colour analyser, you can use the default values. This is the next best solution. The default values are average values coming from production.

- Select a COLOUR TEMPERATURE (e.g. COOL, NORMAL, or WARM).
- Set the RED, GREEN and BLUE default values according to the values in Table 6-2
- When finished press OK on the RC, then press STORE (in the SAM root menu) to store the aligned values to the NVM.
- Restore the initial picture settings after the alignments.

Table 6-2 White tone default settings

Picture mode	Screen size	Colour temperature		
		Red	Green	Blue
Normal	32"	127	124	119
	42"	127	126	113
Cool	32"	119	114	127
	42"	125	121	127
Warm	32"	127	114	73
	42"	127	118	72

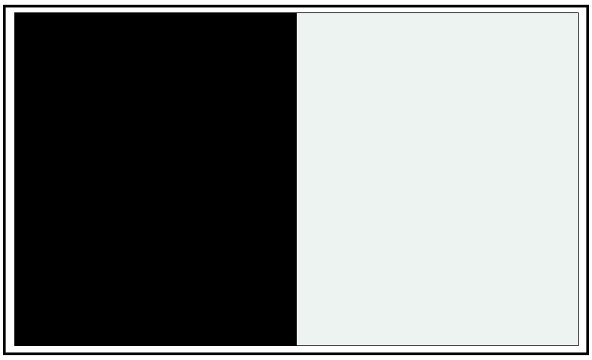
Luminance >400 cd/m^2 in the centre of the screen when "stand" picture at contrast 50, Video contrast 50 and brightness 100, with temp color "cool".

Note: This group setting about colour temp is also applied in TV/EX1/EX2/EXT3/VGA/HDMI/HDMI SIDE/AV SIDE. It means that TV/EX1/EX2/EXT3/VGA/HDMI/HDMI SIDE/ AV SIDE use one same setting.

6.4 PC mode display adjustment

6.4.1 AUTO colour adjustment

Set Brightness 100, Contrast 50, and apply 1024 × 768 @ 60 Hz mode with 50 Black and 50 White pattern at the factory mode.
Activate AUTO-COLOR function for auto ADC offset and gain setup. See Figure 6-1.



18870_209_100209.eps
100308

Figure 6-1 50-Black 50-White

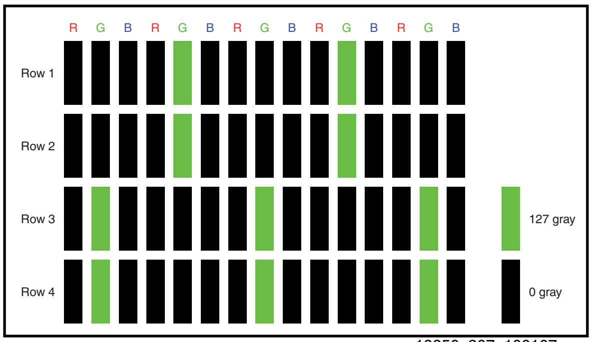
6.5 Gamma upload and V-com adjustment

6.5.1 Gamma Upload

Press Remote control "123789+Info" Key, Gamma data will be load in IC MAX9668ETP by FW

6.5.2 V-com adjustment

Press Remote control “147852+info” Key, or press “062596+Info” for TV V-com adjustment, enter the V-com adjustment mode with a pattern (Green 2) as shown in Figure 6-2.



18850_207_100107.eps
100107

Figure 6-2 1920 × 1080 @ 60 Hz, Pixel ON/OFF pattern

Press up/down key of remote control to select V-com in the OSD. Press the right/left buttons on the remote control to fine-tune V-com untill minimum or no flicker is detected. Press the “Store” key to save the aligned VCOM data into NVM. **Note:** Make sure you get the optimum result before saving. This data is saved in the NVM of the IC MAX9668ETP (U7401). ***This device can only be rewritten 100 times!***

6.6 Option Settings

6.6.1 Reset Options

In SAM, after reset “Reset option code”, restart the set immediately.

6.6.2 Option Code Overview

Table 6-3 Option code overview

CTN_ALT BOM#	Panel Type	Panel ID
32PFL3205/12_1	LG LC320WUY-SCB1	117
32PFL3605/12_1	LG LC320WUY-SCB1	117
42PFL3605/12_1	LG LC420WUY-SCB1	116
32PFL3605/60_1	LG LC320WUY-SCB1	117
42PFL3605/60_1	LG LC420WUY-SCB1	116

6.7 Serial Number Definition

Table 6-4 BOM Code

Panel Supplier	Code
AU	1
CPT	2
LPL (LG)	3
QDI	4
CMO	5
HSD	6
SVA	7

7. Circuit Descriptions

Index of this chapter:

Notes:
- Only **new** circuits (circuits that are not published recently) are described.
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the wiring, block (see chapter 9. Block Diagrams) and circuit diagrams (see chapter 10. Circuit Diagrams and PWB Layouts). Where necessary, you will find a separate drawing for clarification.

7.1 Introduction

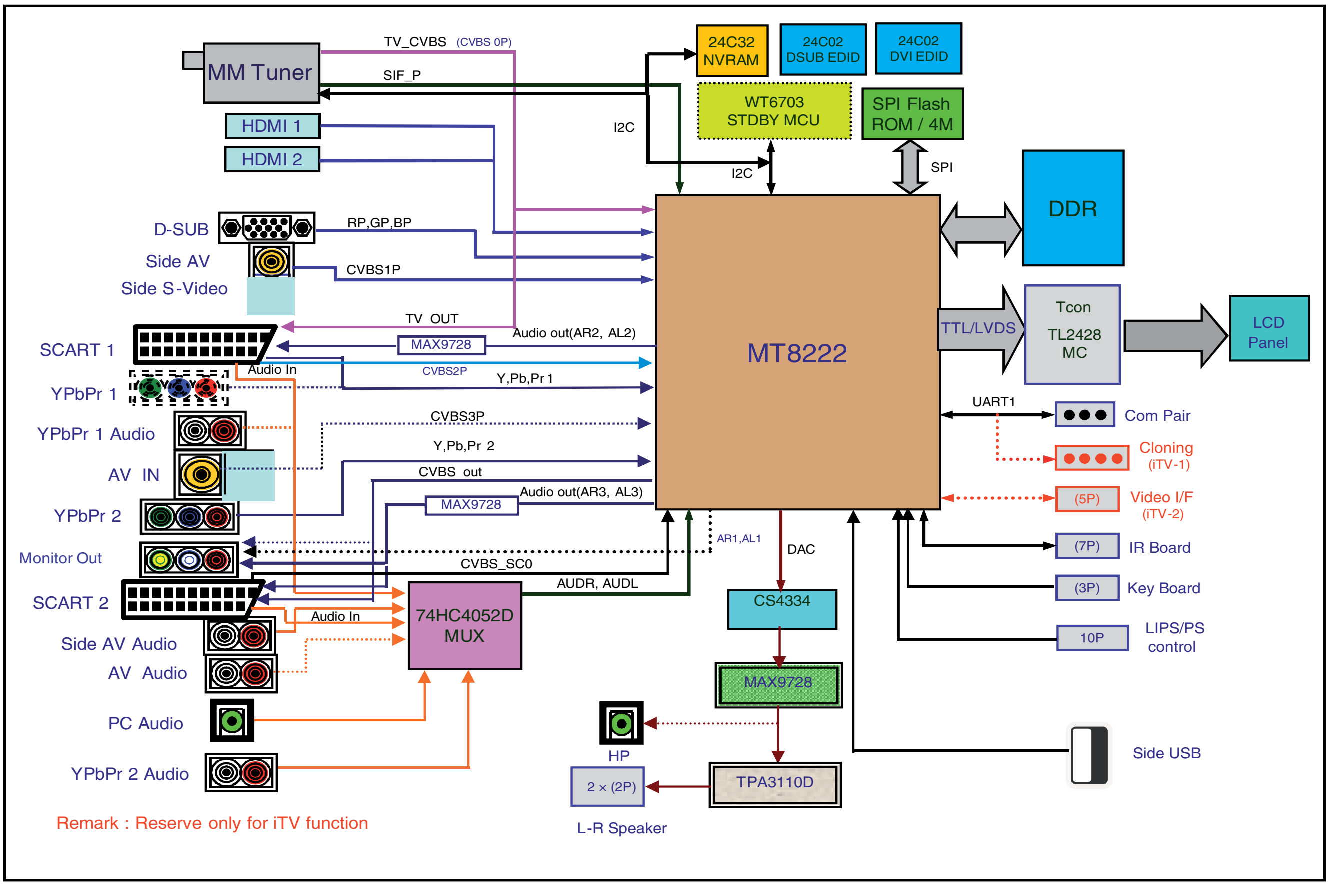
The TPM4.1E LA chassis is using the MT8222 for main processing.

7.1.1 Implementation

A key component of this chassis is the TCON TL2428MC

7.1.2 TPM4.1E LA Architecture Overview

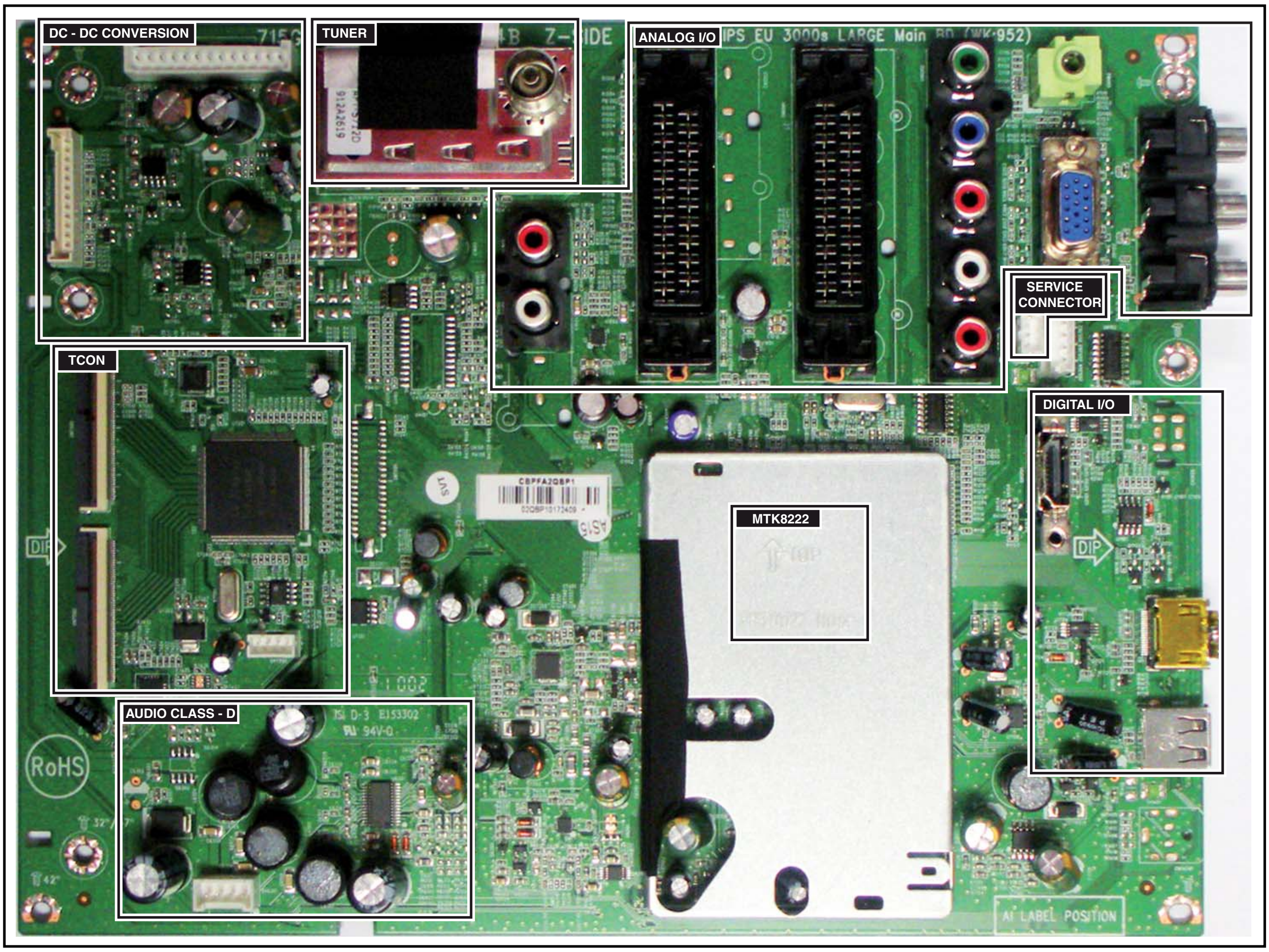
- For details about the chassis diagrams refer to chapter 10. Circuit Diagrams and PWB Layouts. An overview of the TPM4.1E LA architecture can be found in Figure 7-1.



18870_210_100308.eps
100308

Figure 7-1 Architecture of TPM4.1E LA

7.1.3 SSB Cell Layout

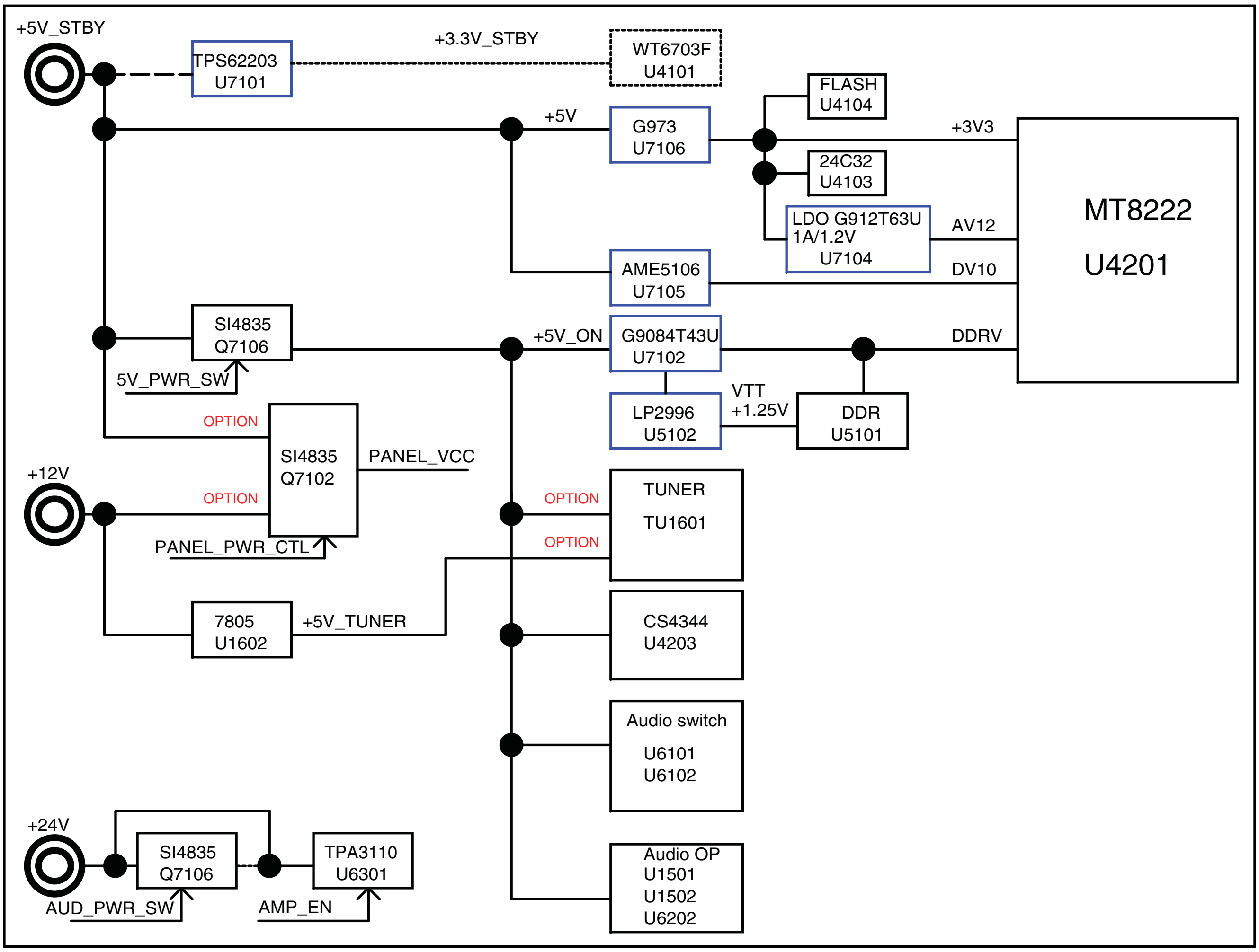


18870_200_100204.eps
100308

Figure 7-2 SSB layout cells (top view)

7.2 Power Architecture

Refer to figure Figure 7-3 for the power architecture of this platform.



18870_404_100211.eps
100308

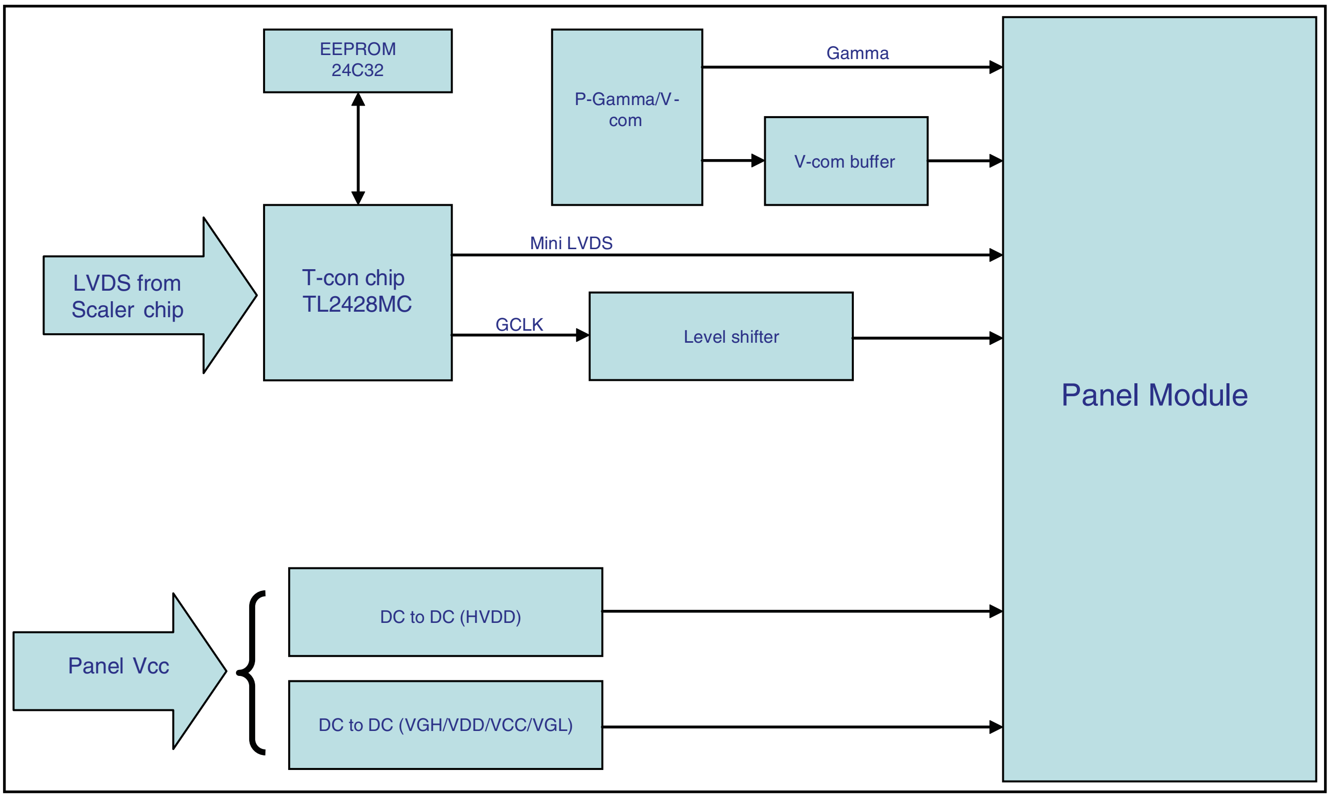
Figure 7-3 Power Architecture TPM4.1E LA platform

7.2.1 Power Supply Unit

1. +5V: It will transform 3.3V, DV 1.0V,5V on.
2. 3.3V: it can't be controlled by MCU. It transform AV1.2 V for analog core power.
3. DV1.0V: It is digital core power.
4. 5V on: it can be controlled by MCU. It transform 2.6V V for DDR power.
5. 12V: it is for panel power, it can be controlled by MCU.
6. 24V: it is for audio power, it can be controlled by MCU.

7.3 T-CON Architecture

Refer to figure Figure 7-4 for the power architecture of this platform.



18870_404_100211.eps
100308

Figure 7-4 T-CON Architecture TPM4.1E platform

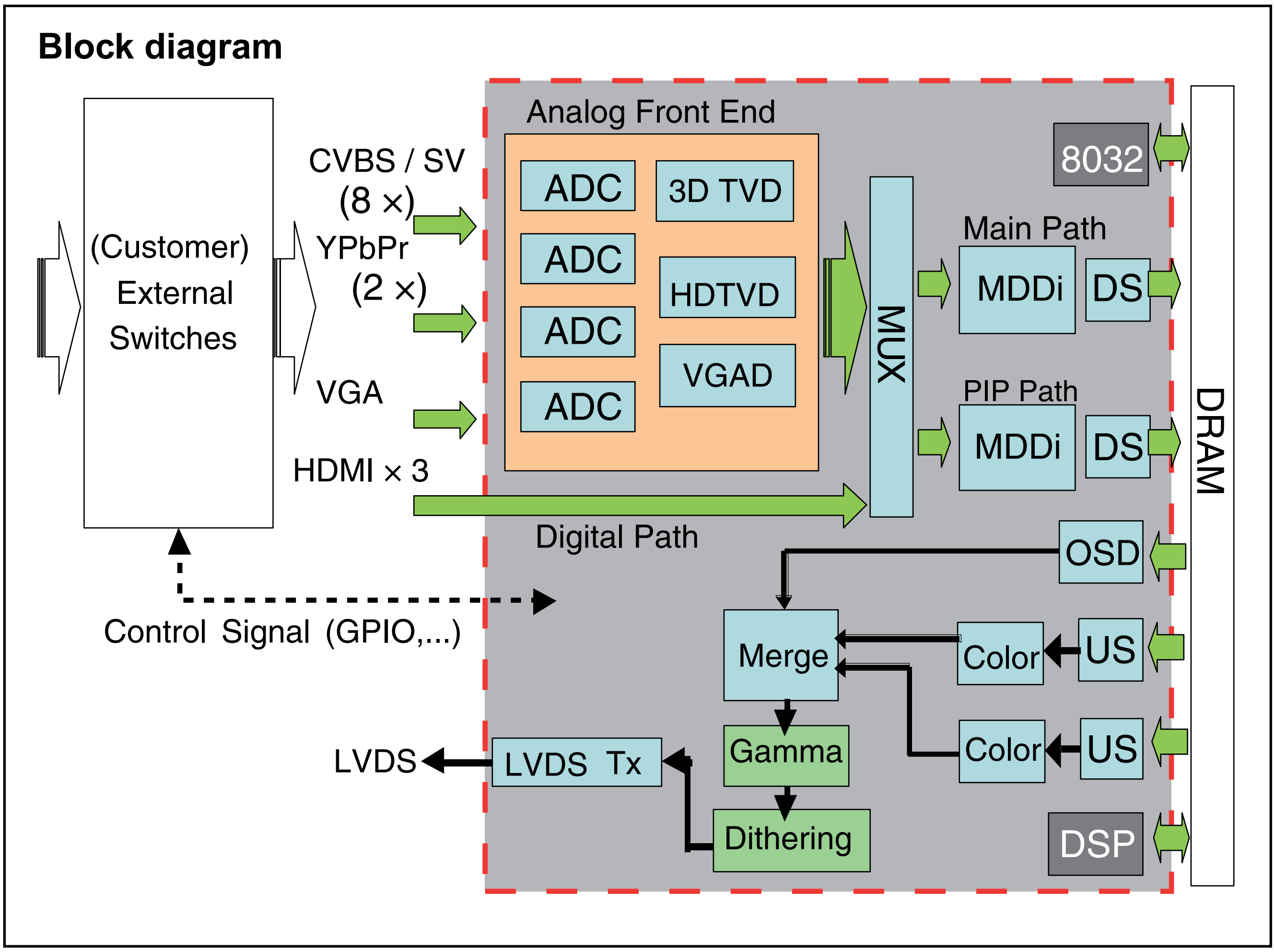
7.3.1 T-CON Unit

The T-CON section includes the T-CON IC, a Level shift IC, a DC to DC conversion IC and a correction Gamma IC. The T-CON IC will transform the LVDS signal into a mini-LVDS signal with a 6 pairs Level shifter IC. This is a 9 channel level-shifter intended for use in LCD display applications such as TVs and monitors. The device converts the logic-level signals generated by the Timing Controller (T-CON) to the high-level signals used by the display panel. The gamma IC outputs eight voltage references for gamma correction in TFT LCDs and one voltage reference for VCOM. Each gamma reference voltage has its own 10-bit digital-to-analog converter (DAC) and buffer to ensure a stable voltage. The VCOM reference voltage has its own 10-bit DAC and an amplifier to ensure a stable voltage when critical levels and patterns are displayed. The DC to DC IC multiple-output power-supply controller generates all the supply rails for thin-film transistor (TFT) liquid-crystal display (LCD) panels in TVs and monitors operating from a regulated 12 V input. It includes a step-down and a step-up regulator, a positive and a negative charge pump, a dual-mode logic controlled high-voltage switch control block, and an adjustable timing power-good output. The positive and negative charge-pump regulators provide the TFT gate driver supply voltages.

8. IC Data Sheets

This section shows the internal block diagrams and pin configurations of ICs that are drawn as "black boxes" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

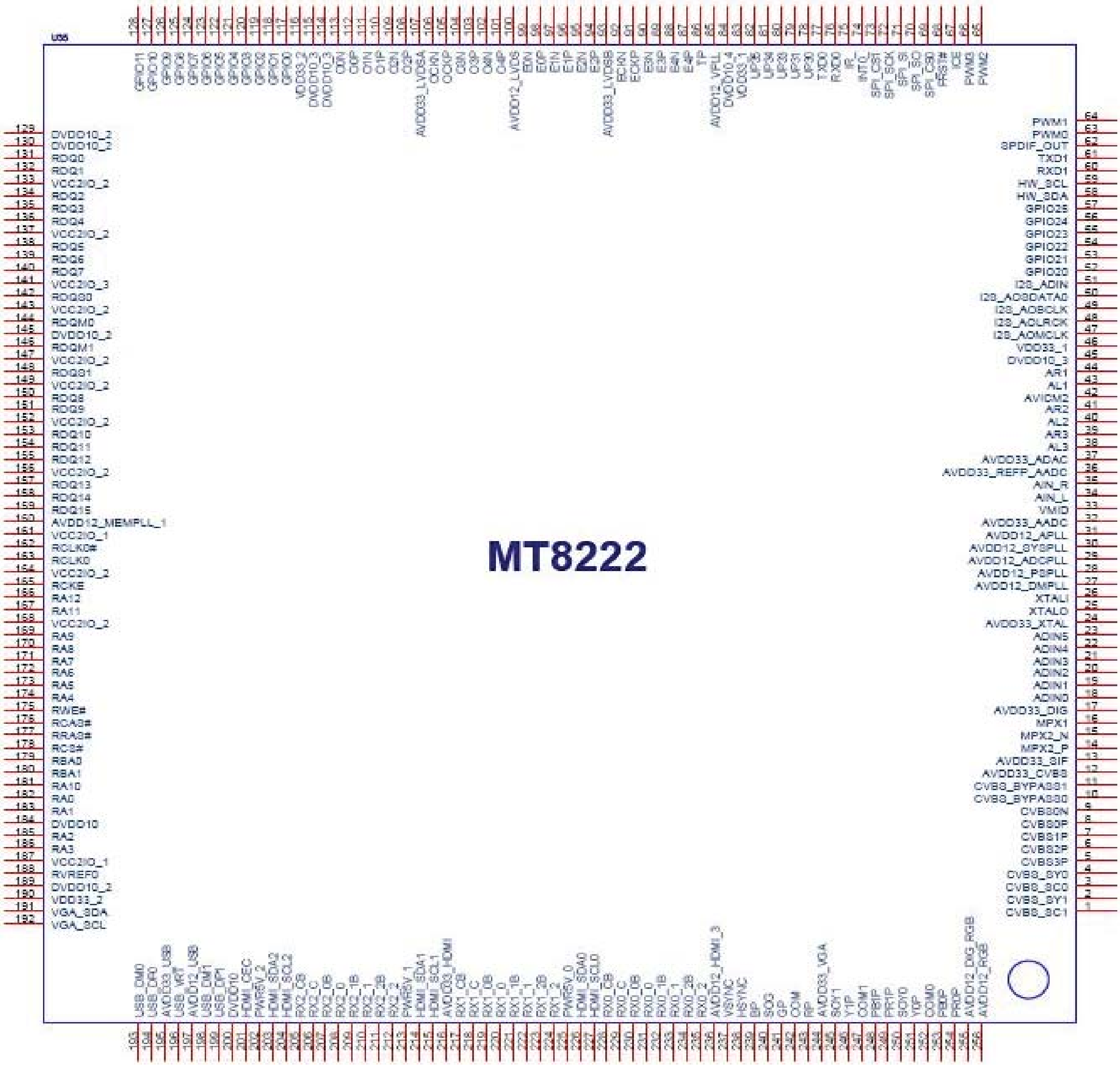
8.1 Diagram B09 SSB: MTK8222, MTK8222TMMU/B LQFP256 (IC U4201)



18870_300_100211.eps
100616

Figure 8-1 Internal block diagram

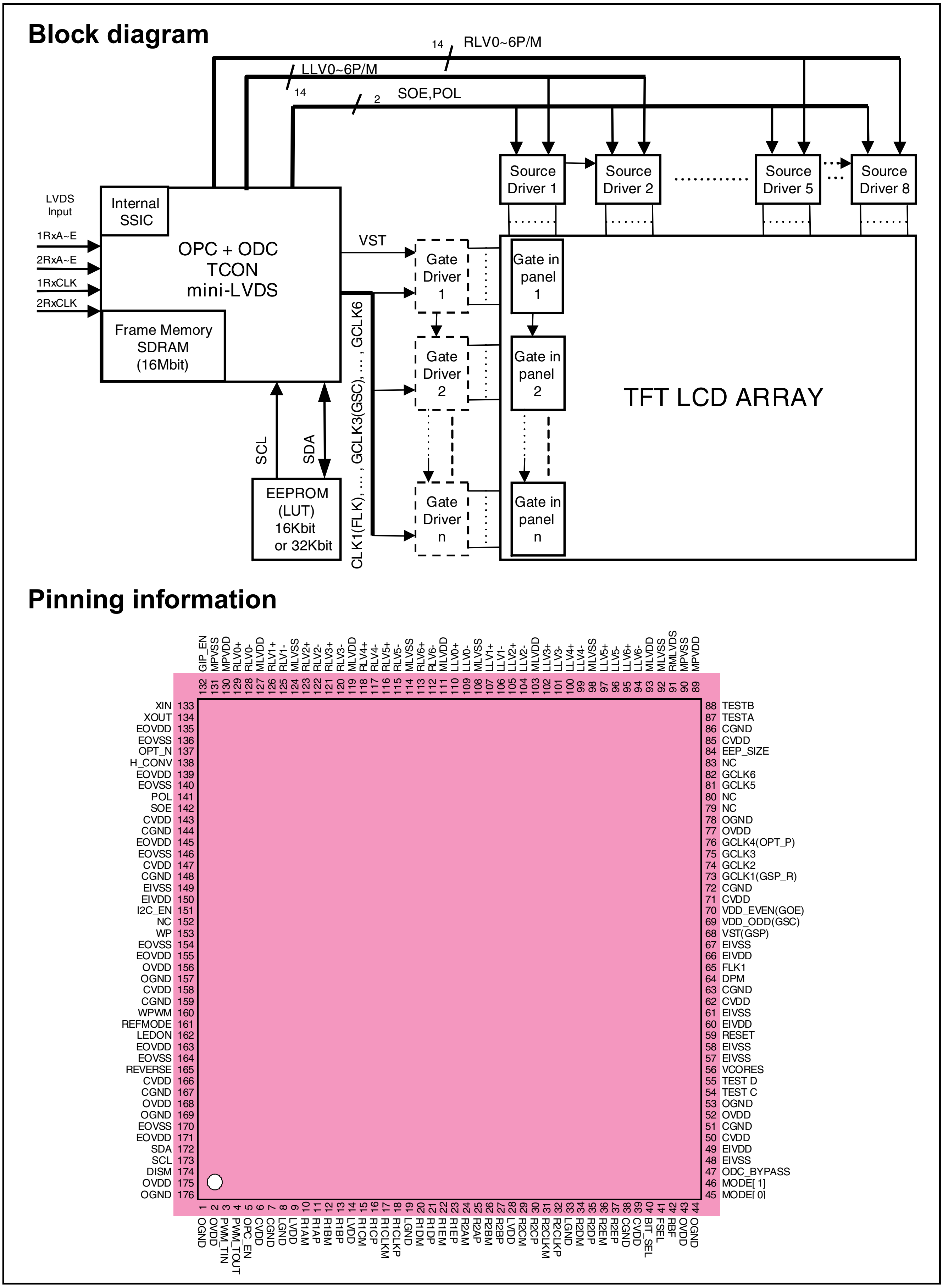
Pinning information



18870_301_100211.eps
100305

Figure 8-2 Pin configuration

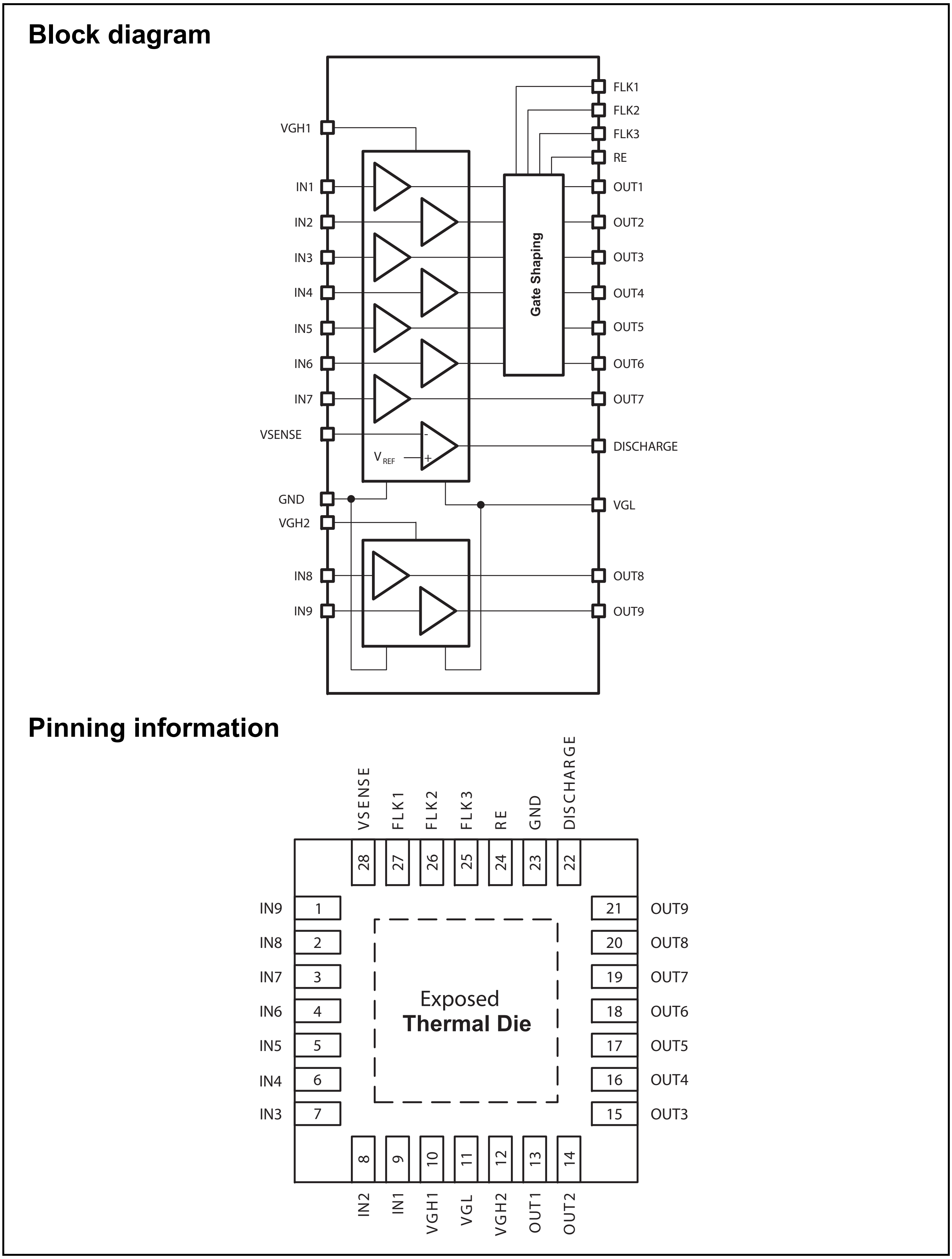
8.2 Diagram B16 SSB: T-CON, LCD Panel I/F, TL2428MC LQPF-176 (IC U7201)



18850_305_100107.eps
100223

Figure 8-3 Internal block diagram and pin configuration

8.3 Diagram B17 SSB: T-CON DC/DC, TPS65192RHDR QFN-28 (IC U7402)

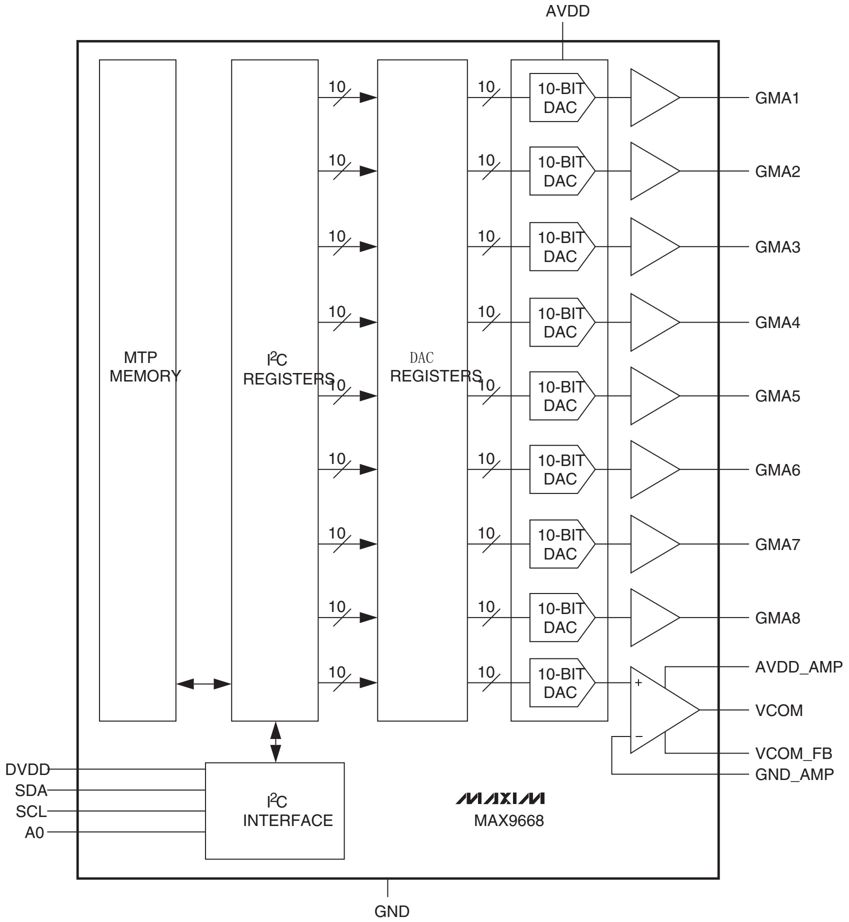


18850_306_100107.eps
100223

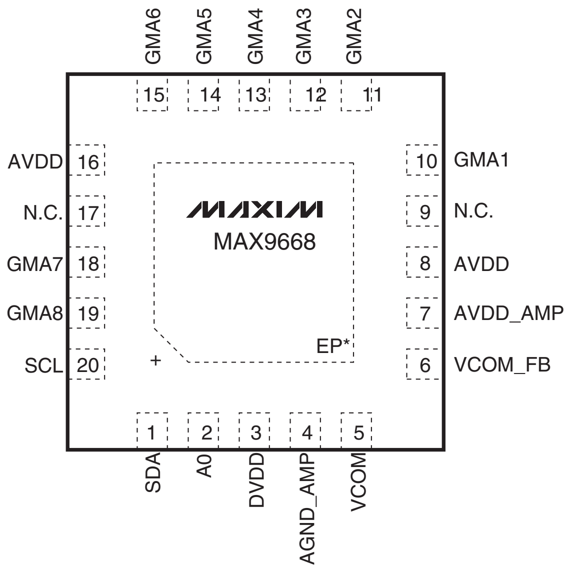
Figure 8-4 Internal block diagram and pin configuration

8.4 Diagram B17 SSB: T-CON DC/DC, MAX9668ETP+ TQFN-EP-20 (IC U7401)

Block diagram



Pinning information



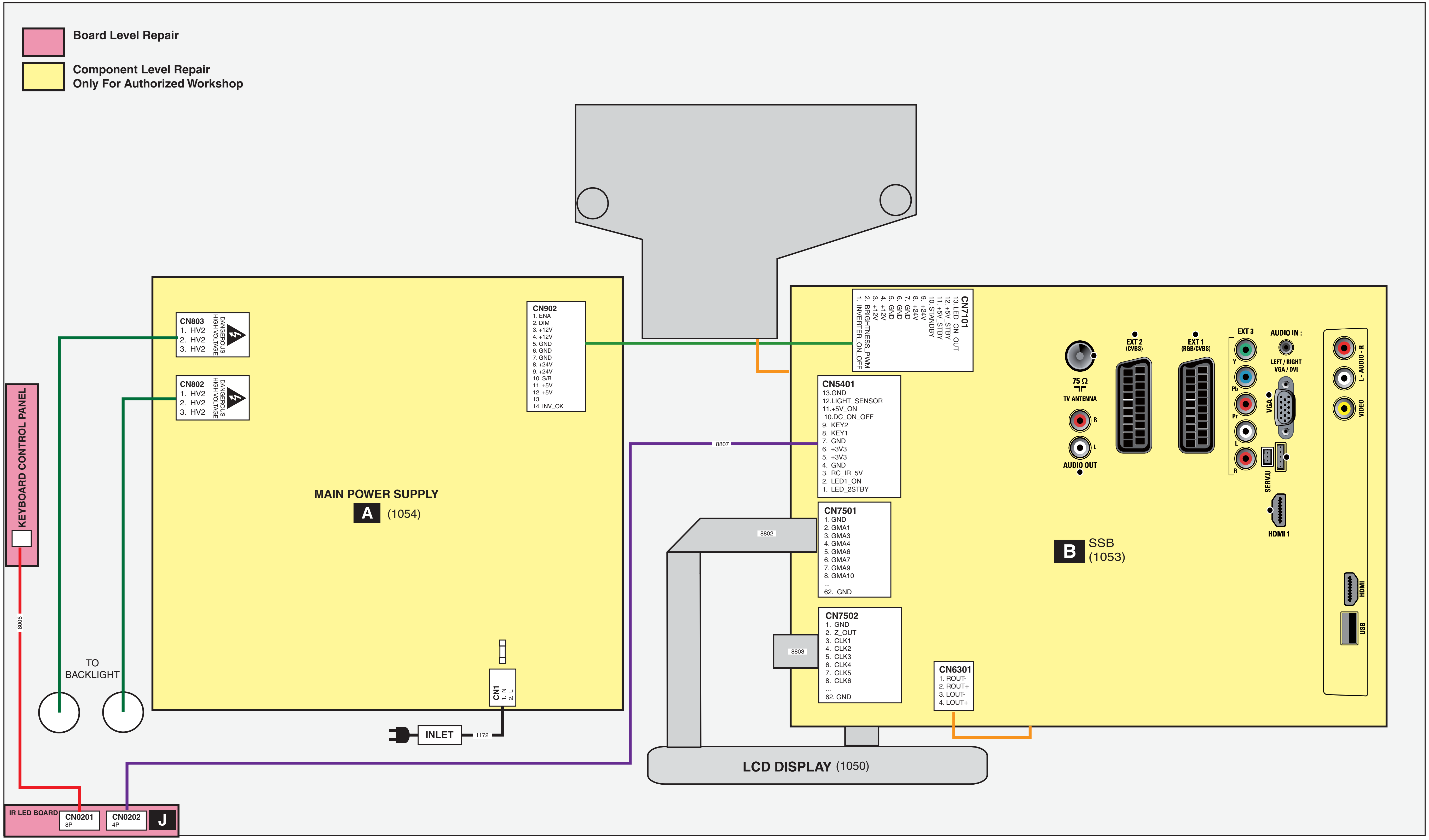
18850_307_100107.eps
100223

Figure 8-5 Internal block diagram and pin configuration

9. Block Diagrams

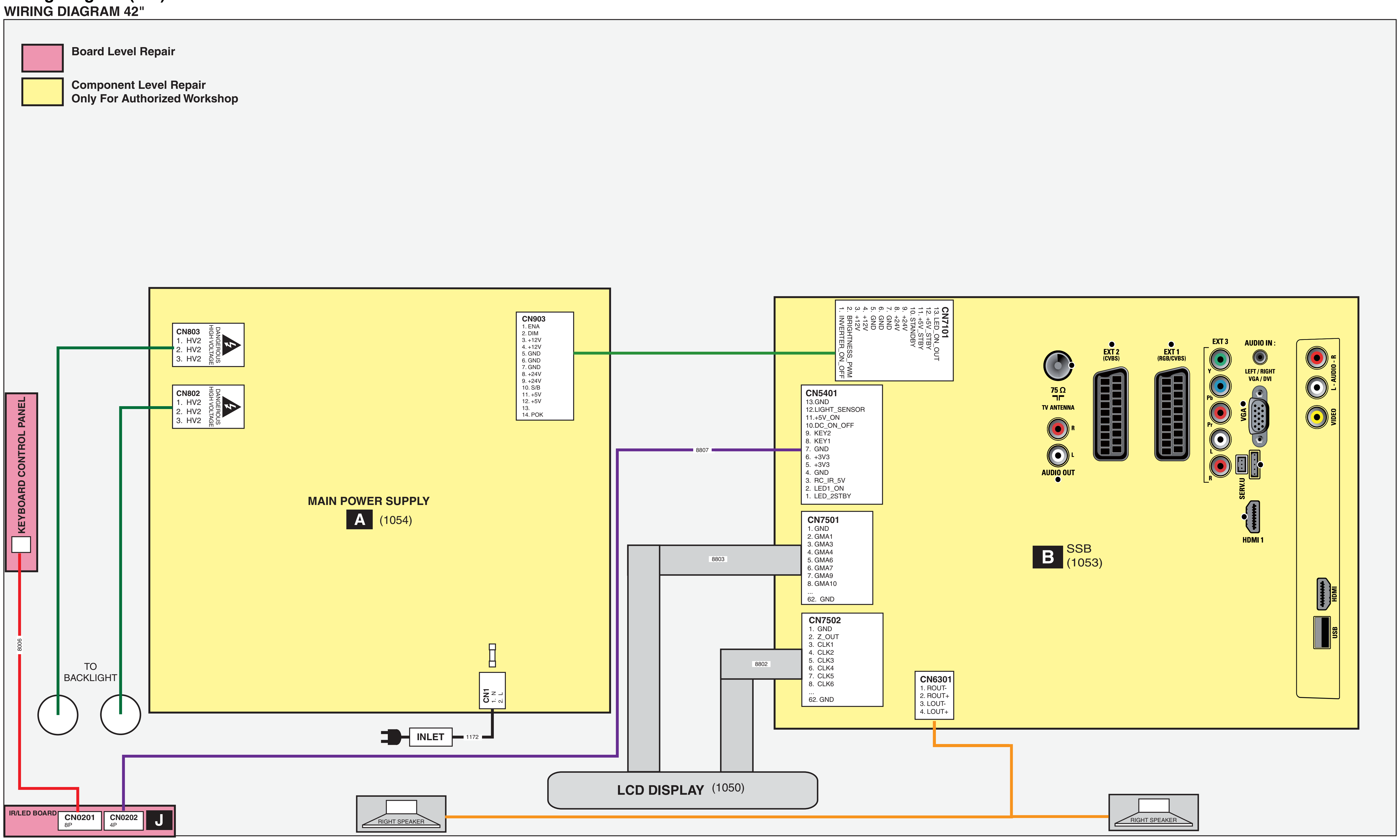
Wiring Diagram (32")

WIRING DIAGRAM 32"



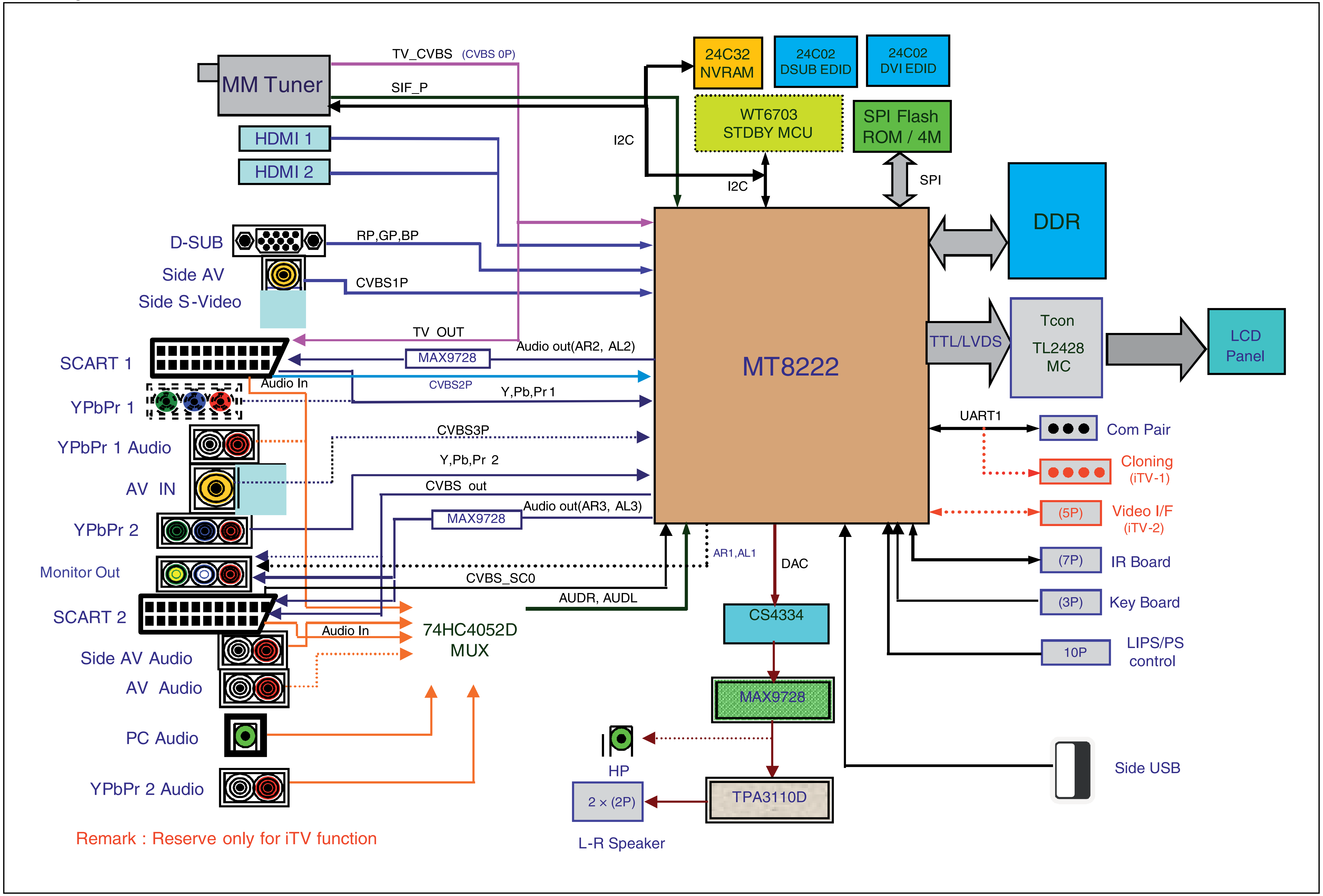
18870_400_100107.eps
100308

Wiring Diagram (42")



18870_401_100107.eps
100308

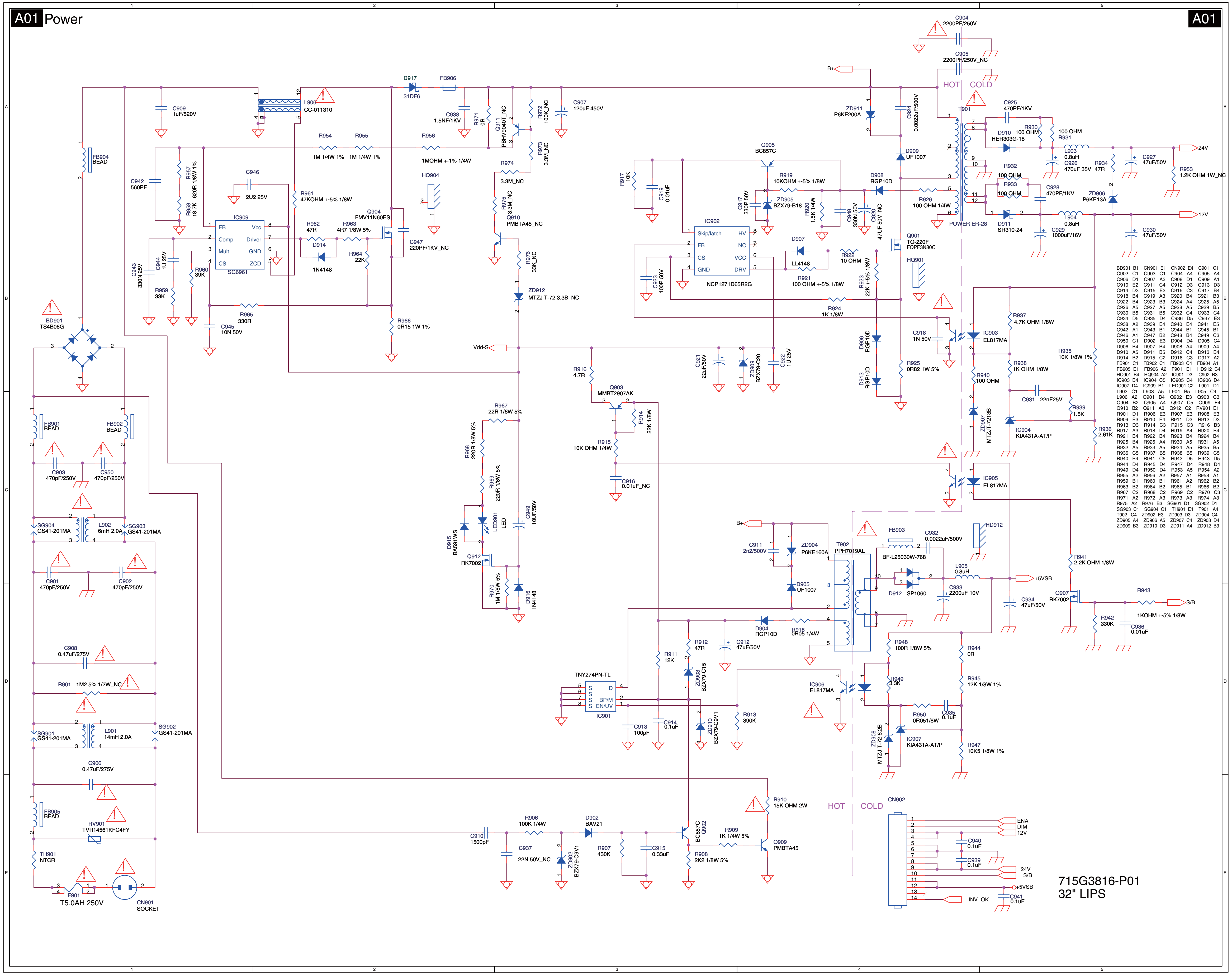
Block Diagram



18870_403_100107.eps
100308

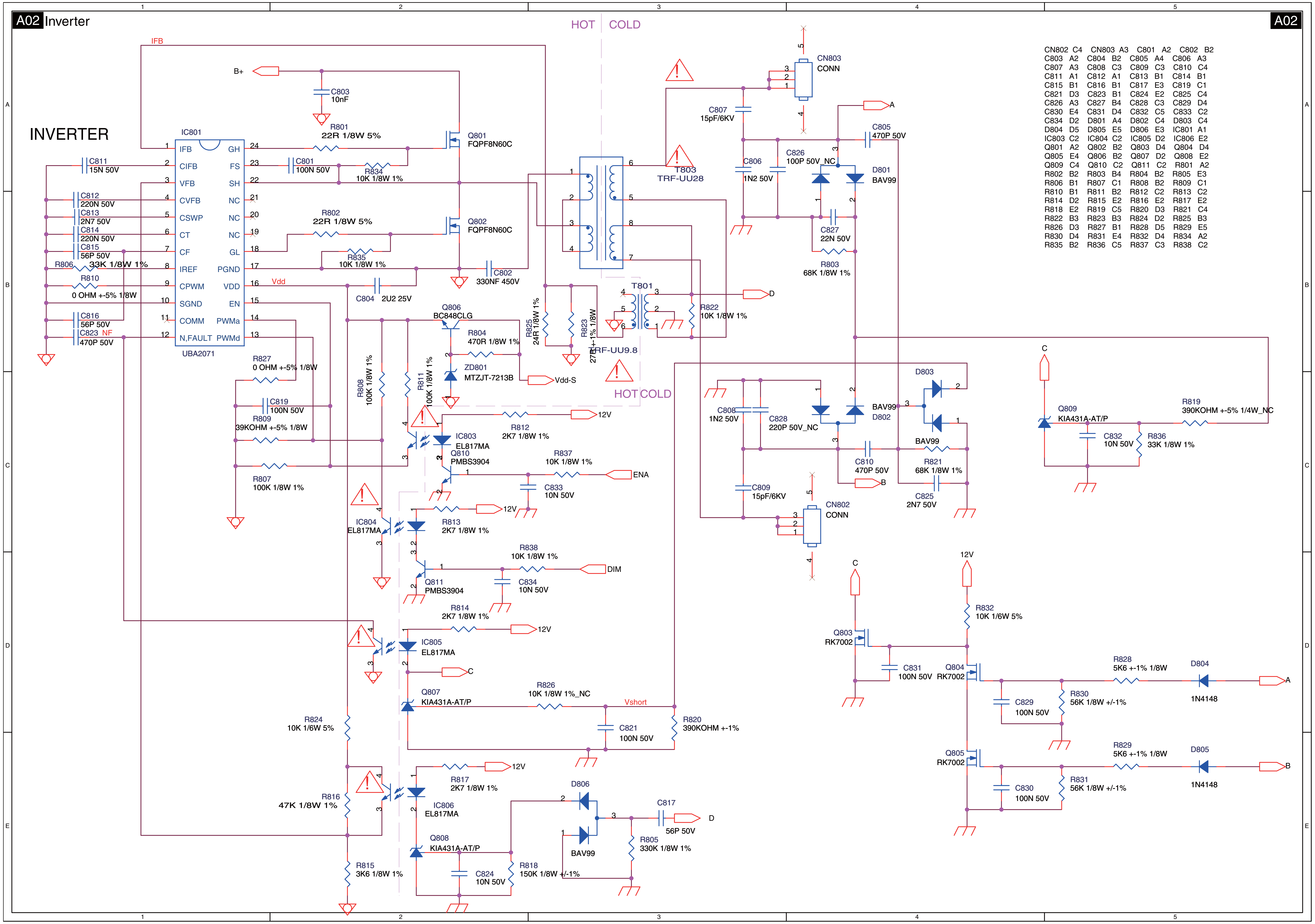
10. Circuit Diagrams and PWB Layouts

Power Board: Power, 32"



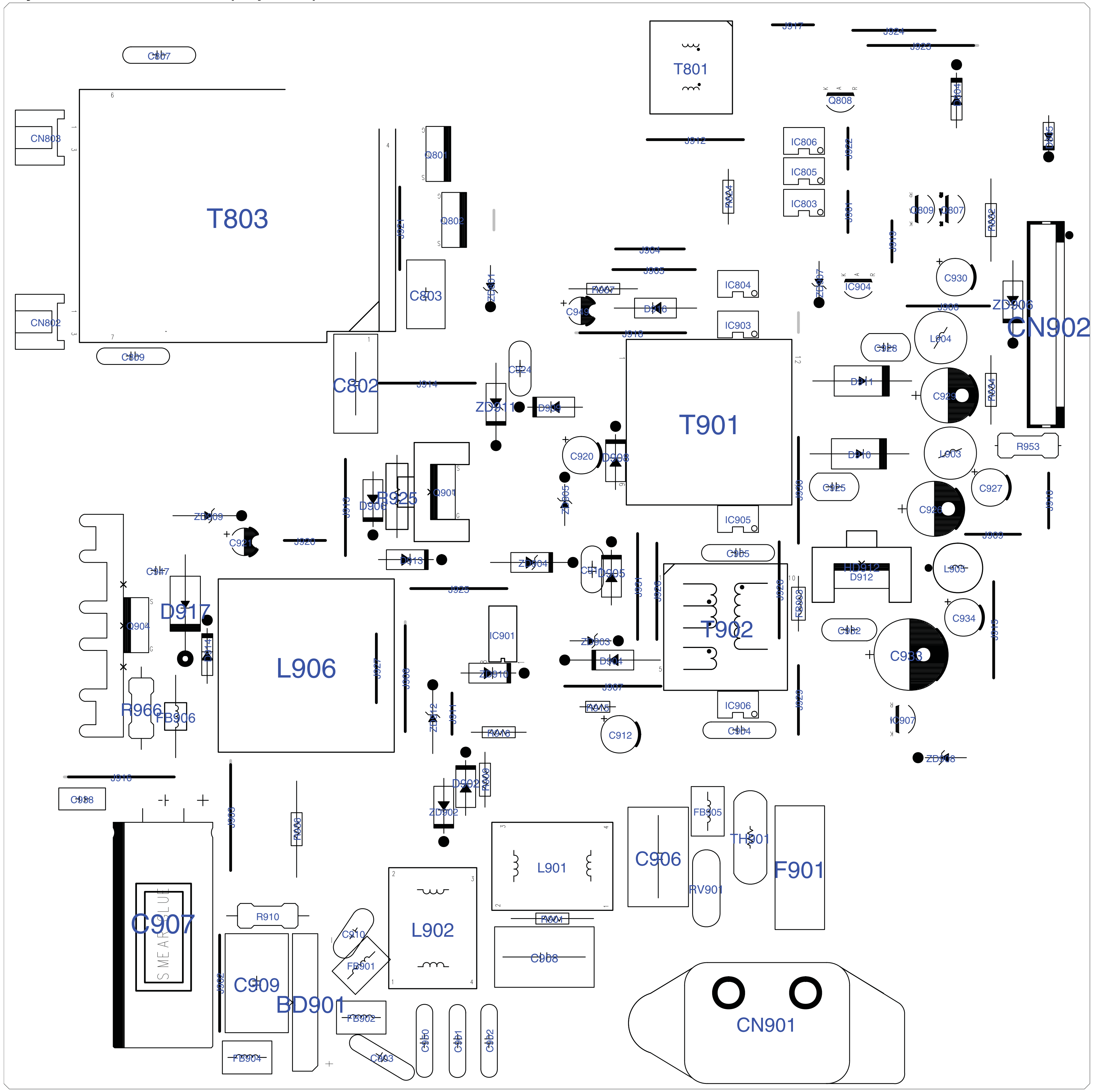
18850_504_100107.eps
100107

Power Board: Inverter, 32"



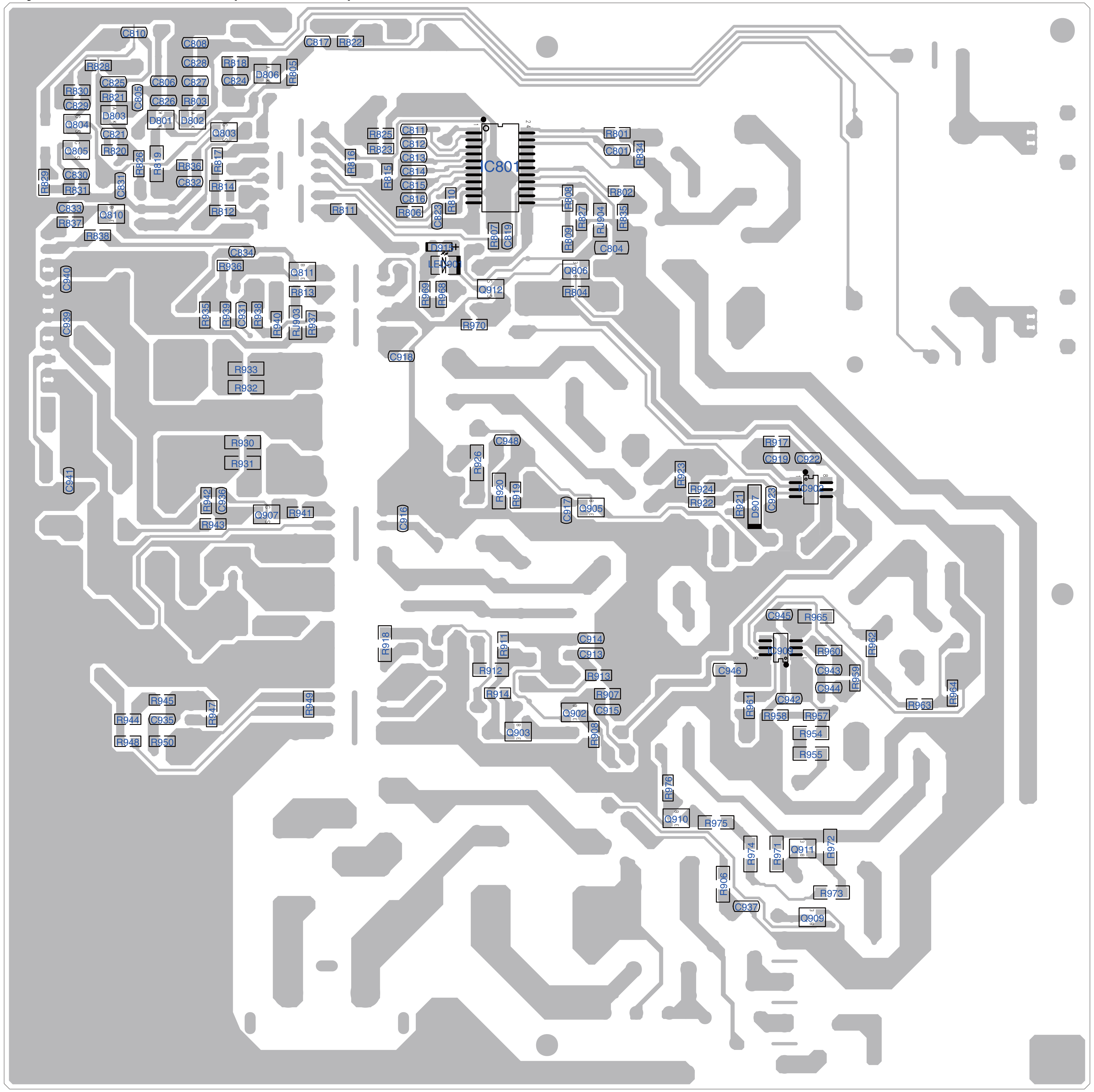
CN802	C4	CN803	A3	C801	A2	C802	B2
C803	A2	C804	B2	C805	A4	C806	A3
C807	A3	C808	C3	C809	C3	C810	C4
C811	A1	C812	A1	C813	B1	C814	B1
C815	B1	C816	B1	C817	E3	C819	C1
C821	D3	C823	B1	C824	E2	C825	C4
C826	A3	C827	B4	C828	C3	C829	D4
C830	E4	C831	D4	C832	C5	C833	C2
C834	D2	D801	A4	D802	C4	D803	C4
D804	D5	D805	E5	D806	E3	IC801	A1
IC803	C2	IC804	C2	IC805	D2	IC806	E2
Q801	A2	Q802	B2	Q803	D4	Q804	D4
Q805	E4	Q806	B2	Q807	D2	Q808	E2
Q809	C4	Q810	C2	Q811	C2	R801	A2
R802	B2	R803	B4	R804	B2	R805	E3
R806	B1	R807	C1	R808	B2	R809	C1
R810	B1	R811	B2	R812	C2	R813	C2
R814	D2	R815	E2	R816	E2	R817	E2
R818	E2	R819	C5	R820	D3	R821	C4
R822	B3	R823	B3	R824	D2	R825	B3
R826	D3	R827	B1	R828	D5	R829	E5
R830	D4	R831	E4	R832	D4	R834	A2
R835	B2	R836	C5	R837	C3	R838	C2

Layout Power Board, 32" (Top Side)



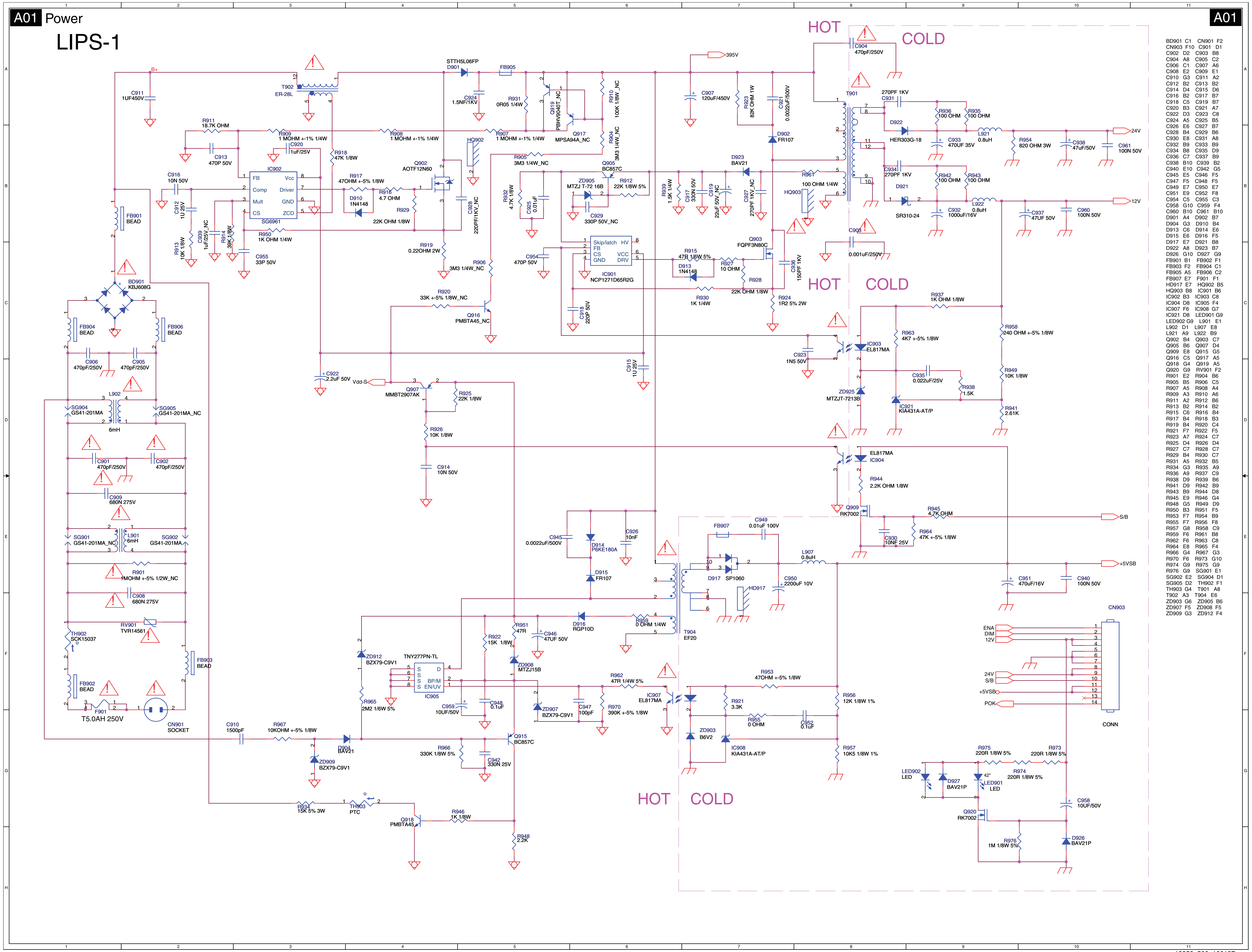
y18850_526_100107.eps
100308

Layout Power Board, 32" (Bottom Side)



18850_527_100107.eps
100107

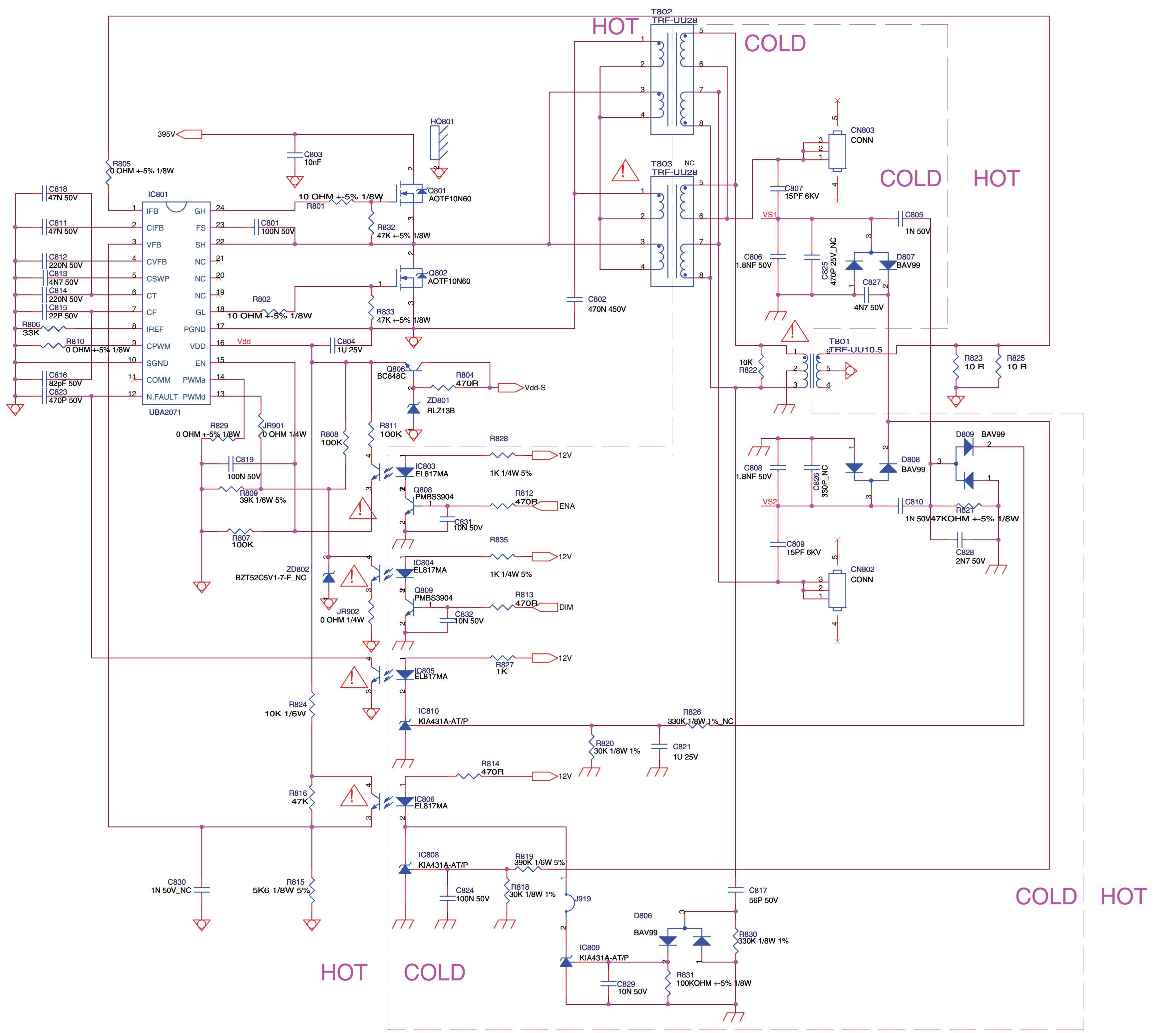
Power Board: Power, 42"



18850_500_100107.eps
100107

Power Board: Inverter, 42"

A02 Inverter

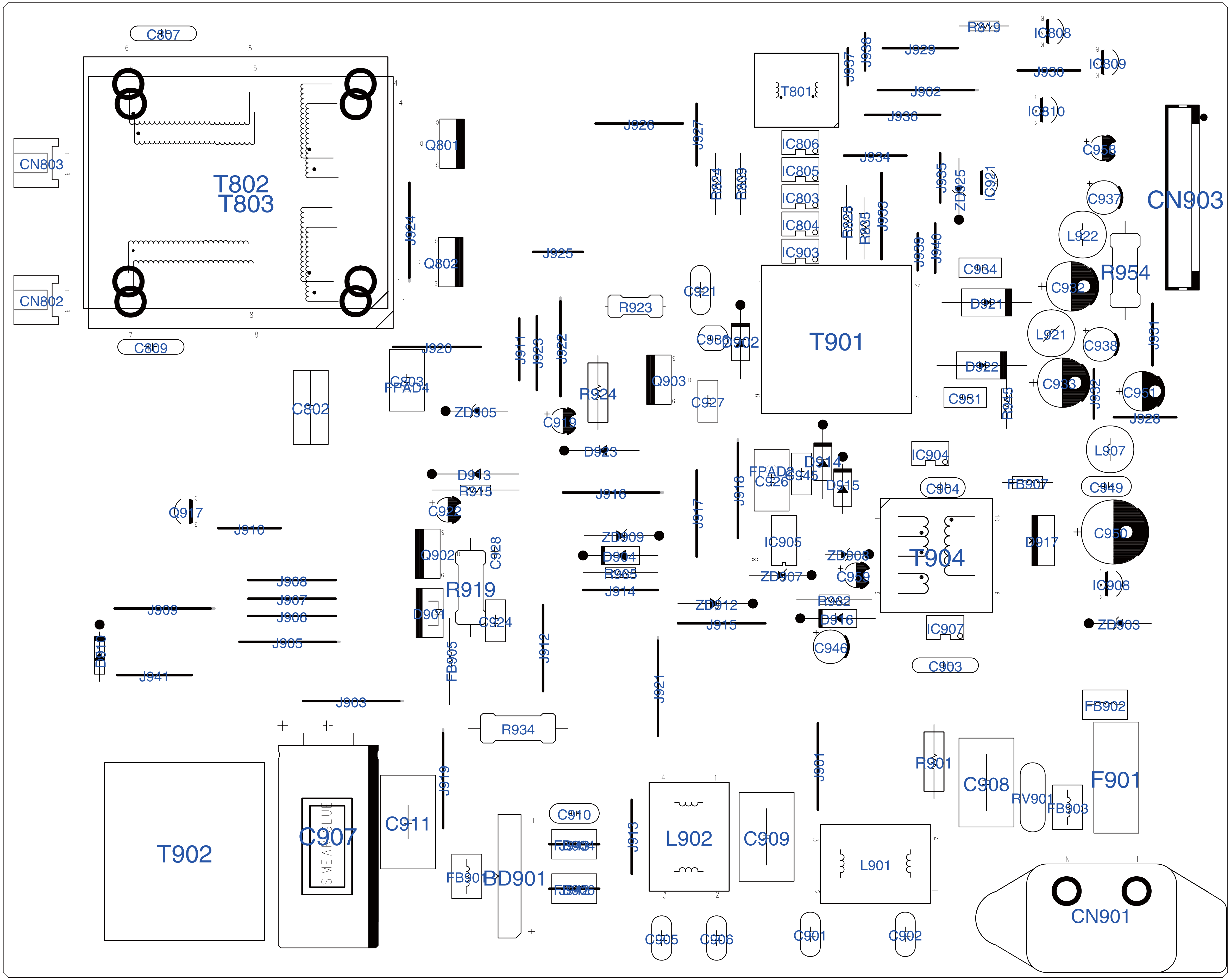


A02

CN802 D7	CN803 B7
C801 B4	C802 C6
C803 B4	C804 C4
C805 B8	C806 B7
C807 B7	C808 D7
C809 D7	C810 D8
C811 B2	C812 B2
C813 B2	C814 C2
C815 C2	C816 C2
C817 F7	C818 B2
C819 D4	C821 E6
C823 C2	C824 F5
C825 B7	C826 D7
C827 C8	C828 D8
C829 G6	C830 F3
C831 D5	C832 E5
D806 F6	D807 B8
D808 D8	D809 C8
HQ801 B5	IC801 B3
IC803 D5	IC804 D5
IC805 E5	IC806 F5
IC808 F5	IC809 G6
IC810 E5	JR901 C4
JR902 D4	J919 F6
Q801 B5	Q802 B5
Q806 C5	Q808 D5
Q809 D5	R801 B4
R802 C4	R804 C5
R805 B3	R806 C2
R807 D4	R808 C4
R809 D4	R810 C2
R811 C4	R812 D5
R813 D5	R814 F5
R815 F4	R816 F4
R818 F5	R819 F5
R820 E6	R821 D8
R822 C7	R823 C8
R824 E4	R825 C9
R826 E7	R827 E5
R828 D5	R829 C3
R830 G7	R831 G6
R832 B4	R833 C4
R835 D5	T801 C7
T802 A6	T803 B6
ZD801 C5	ZD802 D4

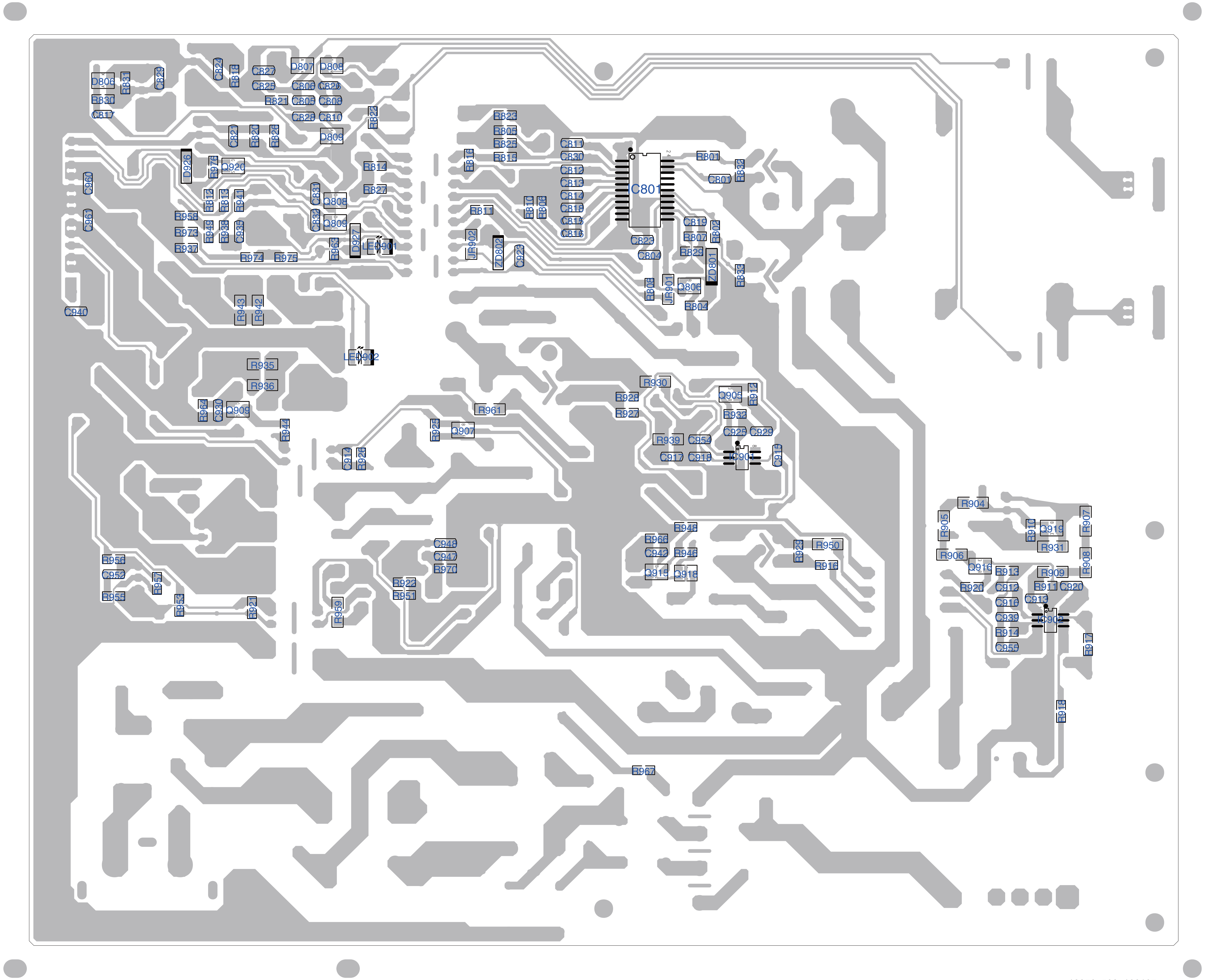
18850_501_100107.eps
100308

Layout Power Board, 42" (Top Side)



18850_502_100107.eps
100308

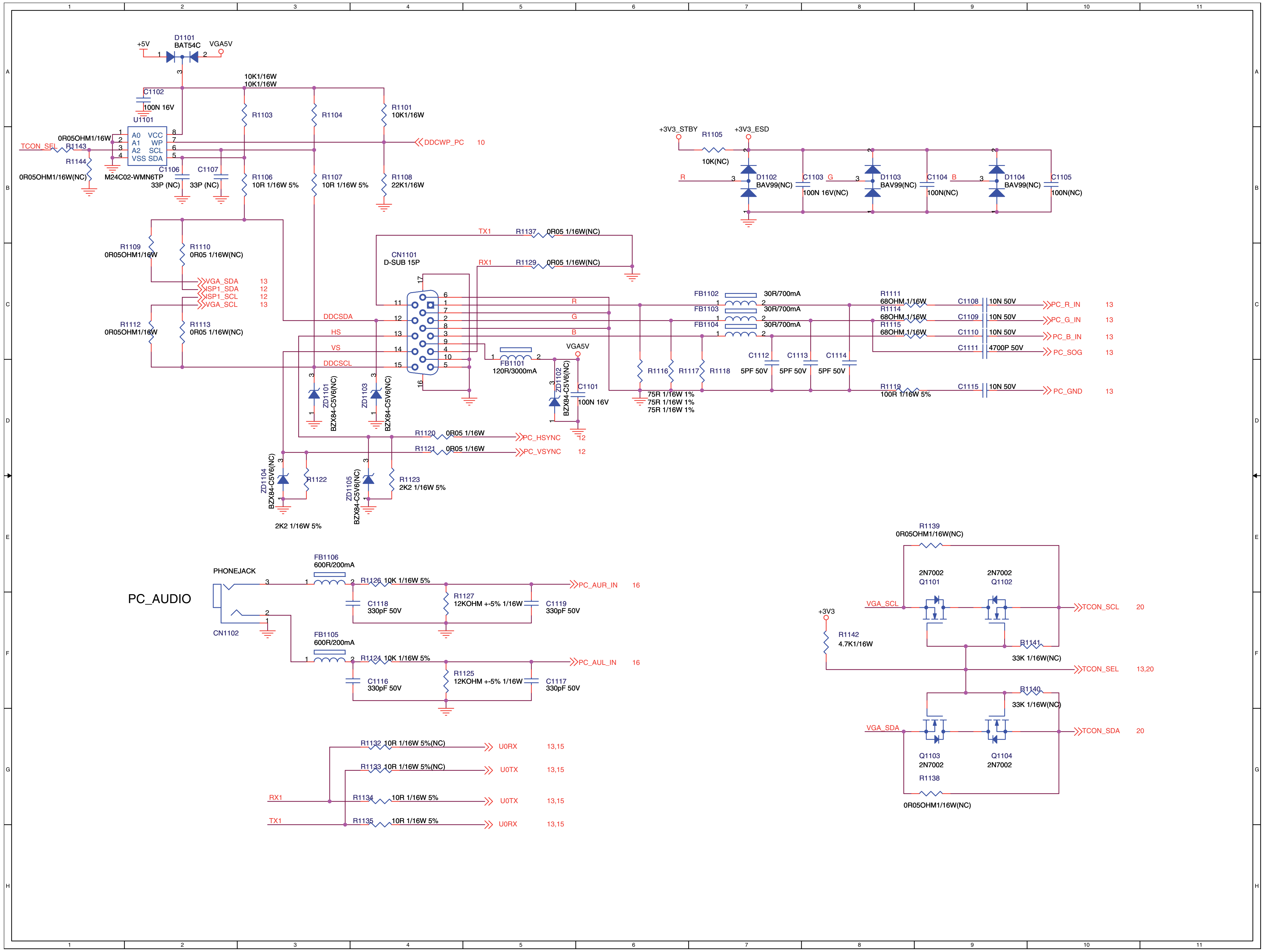
Layout Power Board, 42" (Bottom Side)



18850_503_100107.eps
100202

SSB: D-Sub Input

B01 D-Sub Input **B01**



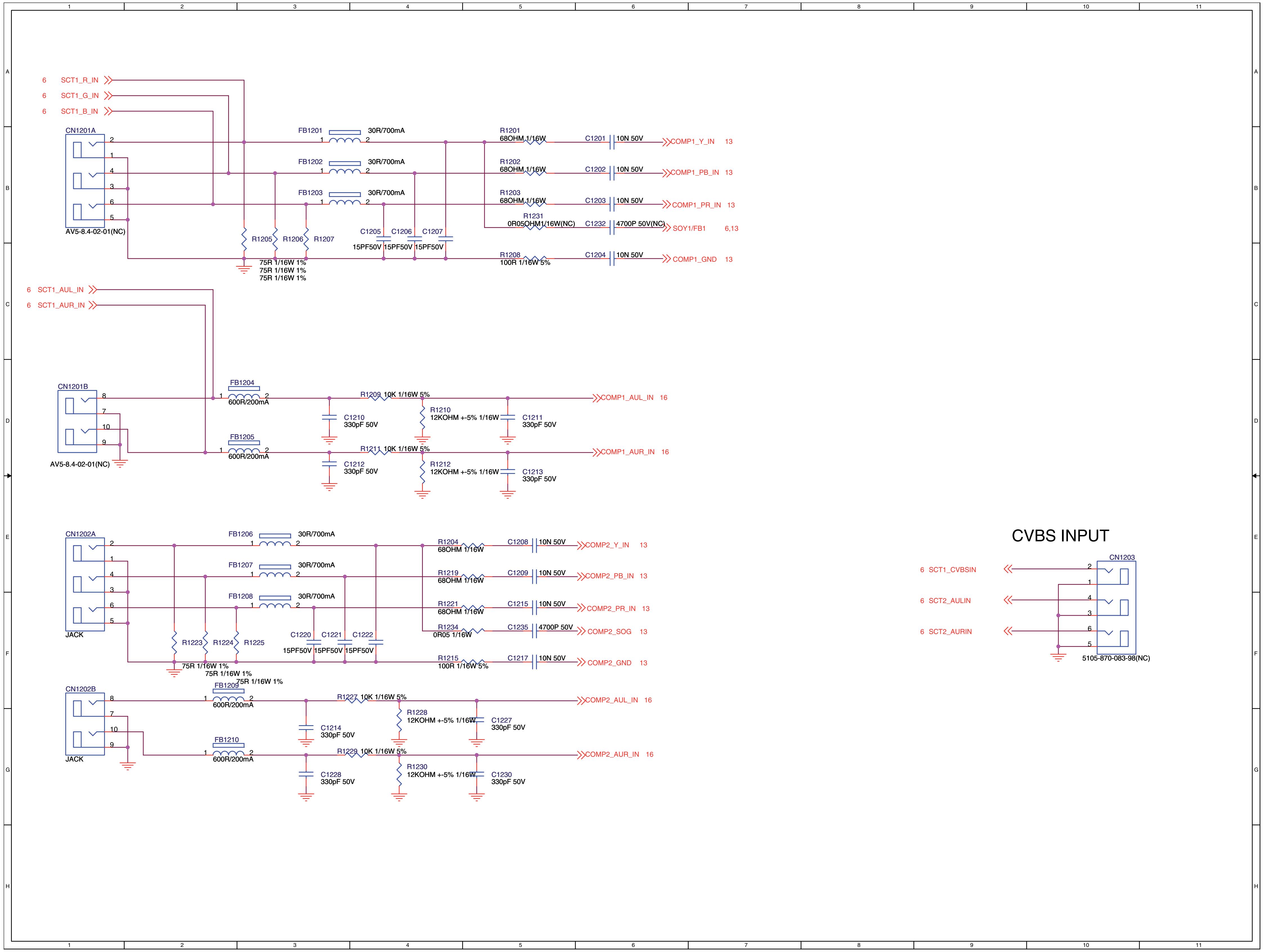
CN1101 C4	CN1102 E2
C1101 D5	C1102 A2
C1103 B7	C1104 B8
C1105 B10	C1106 B2
C1107 B2	C1108 C9
C1109 C9	C1110 C9
C1111 C9	C1112 C7
C1113 C7	C1114 C8
C1115 D9	C1116 F3
C1117 F5	C1118 E3
C1119 E5	D1101 A2
D1102 B7	D1103 B8
D1104 B9	FB1101 C5
FB1102 C7	FB1103 C7
FB1104 C7	FB1105 F3
FB1106 E3	Q1101 E8
Q1102 E9	Q1103 F8
Q1104 F9	R1101 A4
R1103 A2	R1104 A3
R1105 B7	R1106 B2
R1107 B3	R1108 B4
R1109 B2	R1110 B2
R1111 C8	R1112 C2
R1113 C2	R1114 C8
R1115 C8	R1116 C6
R1117 C6	R1118 C6
R1119 D8	R1120 D4
R1121 D4	R1122 D3
R1123 D4	R1124 F4
R1125 F4	R1126 E4
R1127 E4	R1129 C5
R1132 G4	R1133 G4
R1134 G4	R1135 G4
R1137 B5	R1138 G8
R1139 E8	R1140 F9
R1141 F9	R1142 F8
R1143 B1	R1144 B1
U1101 A2	ZD1101 D3
ZD1102 D5	ZD1103 D4
ZD1104 D3	ZD1105 D4

D-Sub Input 715G3786

18870_501_100107.eps
100308

SSB: REAR I/O

B02 Rear I/O B02



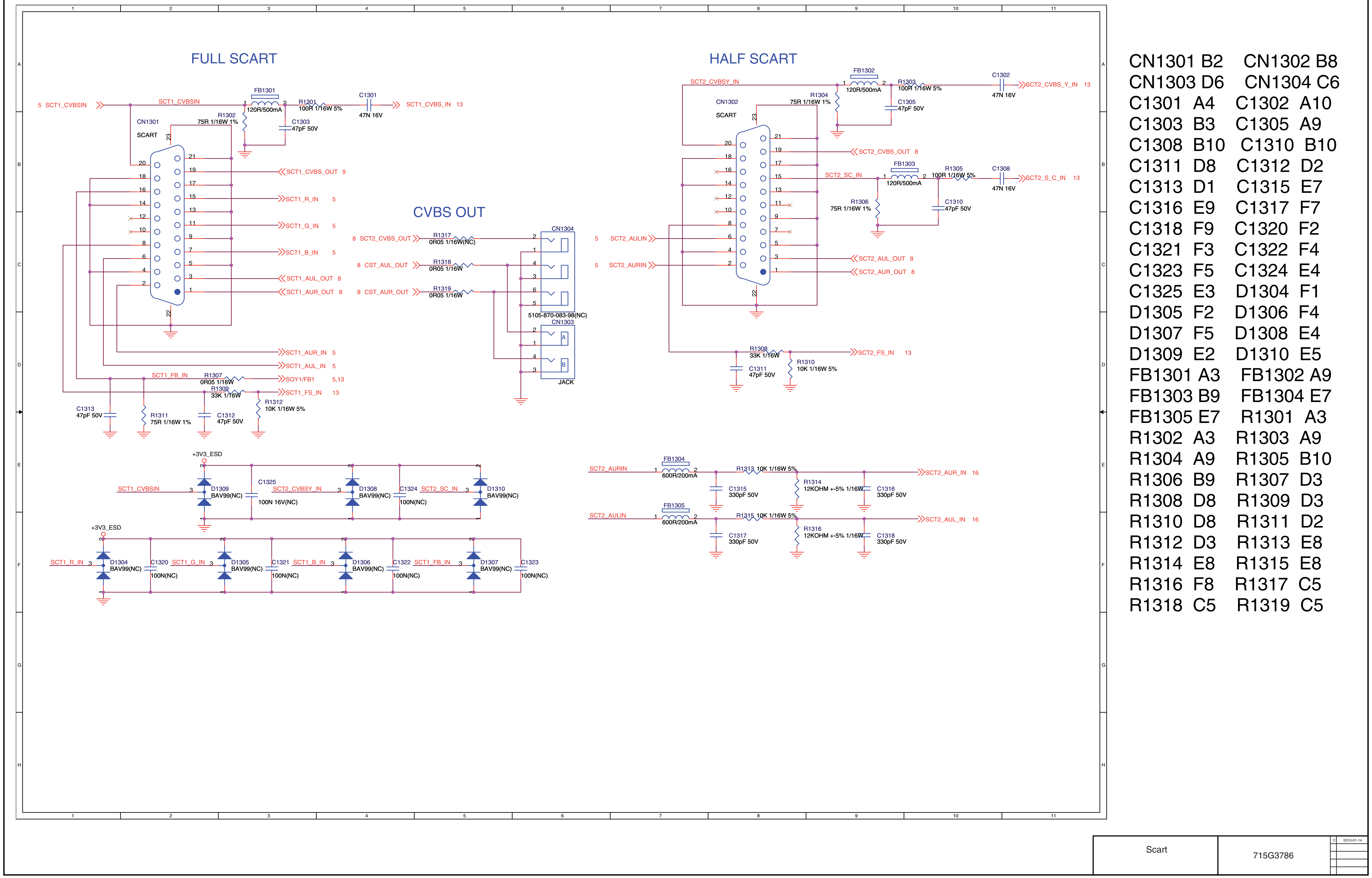
N1201A B1	N1201B D1
N1202A E1	N1202B F1
CN1203 E10	C1201 B6
C1202 B6	C1203 B6
C1204 C6	C1205 B4
C1206 B4	C1207 B4
C1208 E5	C1209 E5
C1210 D3	C1211 D5
C1212 D3	C1213 D5
C1214 G3	C1215 E5
C1217 F5	C1220 F3
C1221 F3	C1222 F4
C1227 F5	C1228 G3
C1230 G5	C1232 B6
C1235 F5	FB1201 A3
FB1202 B3	FB1203 B3
FB1204 D2	FB1205 D2
FB1206 E3	FB1207 E3
FB1208 E3	FB1209 F2
FB1210 G2	R1201 B5
R1202 B5	R1203 B5
R1204 E4	R1205 B2
R1206 B3	R1207 B3
R1208 C5	R1209 D4
R1210 D4	R1211 D4
R1212 D4	R1215 F4
R1219 E4	R1221 E4
R1223 F2	R1224 F2
R1225 F2	R1227 F3
R1228 F4	R1229 G3
R1230 G4	R1231 B5

Rear I/O 715G3786

18870_502_100107.eps
100308

SSB: Scart

B03 Scart **B03**

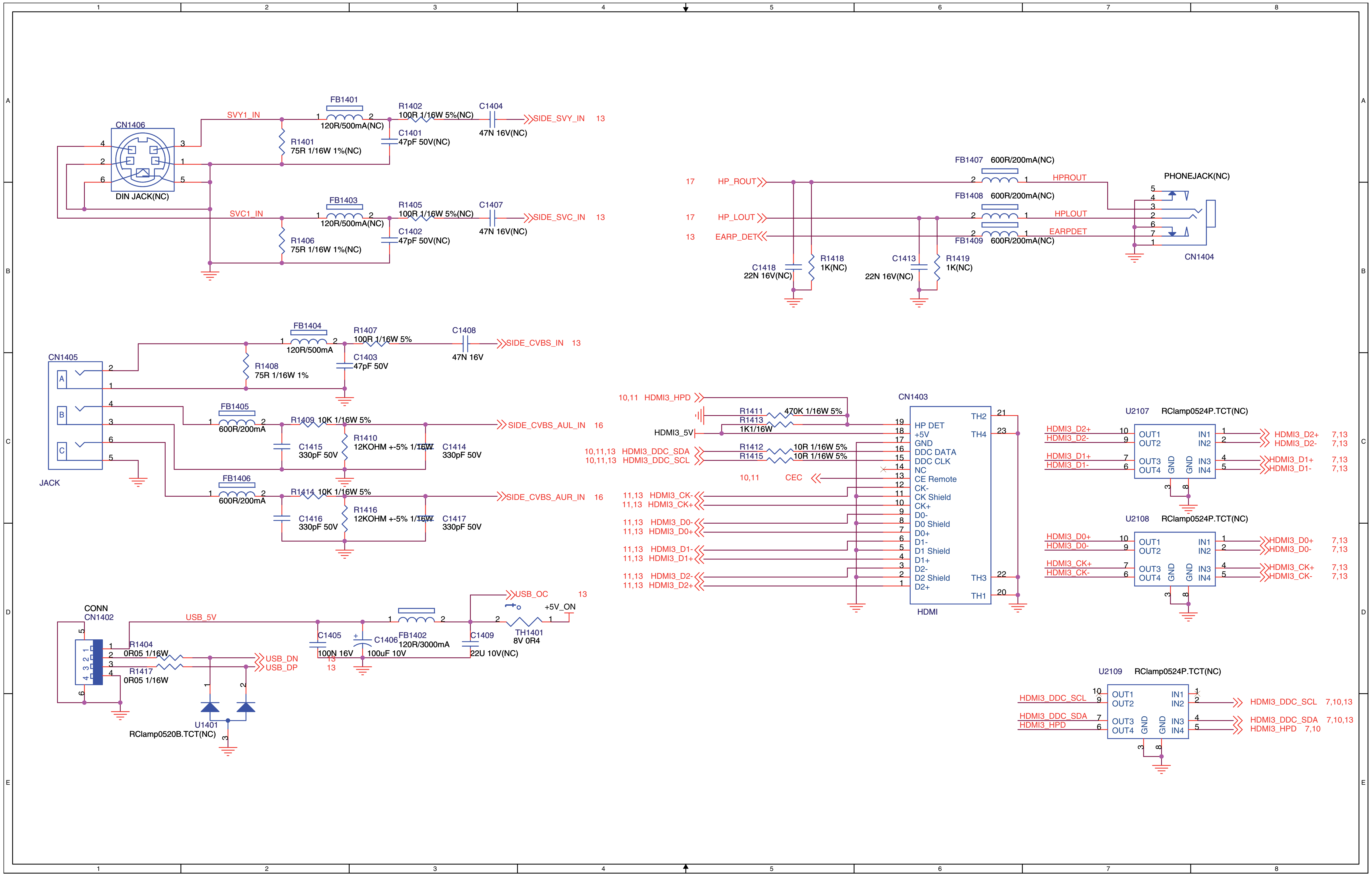


CN1301 B2 CN1302 B8
CN1303 D6 CN1304 C6
C1301 A4 C1302 A10
C1303 B3 C1305 A9
C1308 B10 C1310 B10
C1311 D8 C1312 D2
C1313 D1 C1315 E7
C1316 E9 C1317 F7
C1318 F9 C1320 F2
C1321 F3 C1322 F4
C1323 F5 C1324 E4
C1325 E3 D1304 F1
D1305 F2 D1306 F4
D1307 F5 D1308 E4
D1309 E2 D1310 E5
FB1301 A3 FB1302 A9
FB1303 B9 FB1304 E7
FB1305 E7 R1301 A3
R1302 A3 R1303 A9
R1304 A9 R1305 B10
R1306 B9 R1307 D3
R1308 D8 R1309 D3
R1310 D8 R1311 D2
R1312 D3 R1313 E8
R1314 E8 R1315 E8
R1316 F8 R1317 C5
R1318 C5 R1319 C5

18870_503_100107.eps
100308

SSB: SIDE Input

B04 Side Input



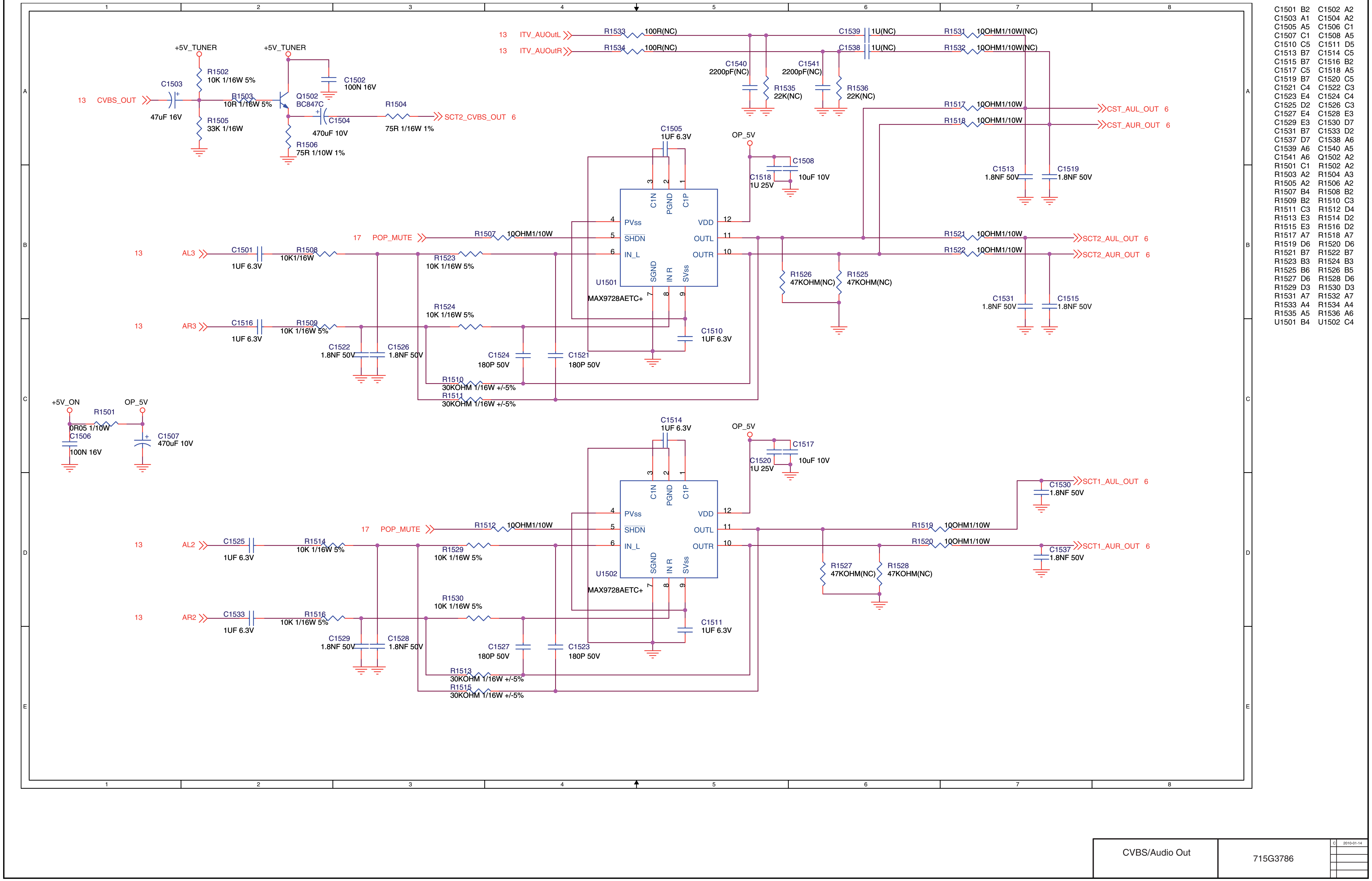
CN1402 D1	CN1403 C6
CN1404 B7	CN1405 C1
CN1406 A1	C1401 A3
C1402 B3	C1403 C2
C1404 A3	C1405 D2
C1406 D3	C1407 B3
C1408 B3	C1409 D3
C1413 B6	C1414 C3
C1415 C2	C1416 C2
C1417 C3	C1418 B5
FB1401 A2	FB1402 D3
FB1403 B2	FB1404 B2
FB1405 C2	FB1406 C2
FB1407 A6	FB1408 B6
FB1409 B6	R1401 A2
R1402 A3	R1404 D1
R1405 B3	R1406 B2
R1407 B3	R1408 B2
R1409 C2	R1410 C2
R1411 C5	R1412 C5
R1413 C5	R1414 C2
R1415 C5	R1416 C2
R1417 D1	R1418 B5
R1419 B6	TH1401 D3
U1401 D2	U2107 C7
U2108 C7	U2109 D7

Side Input 715G3786

18870_504_100107.eps
100308

SSB: CVBS/ Audio Out

B05 CVBS/Audio Out **B05**

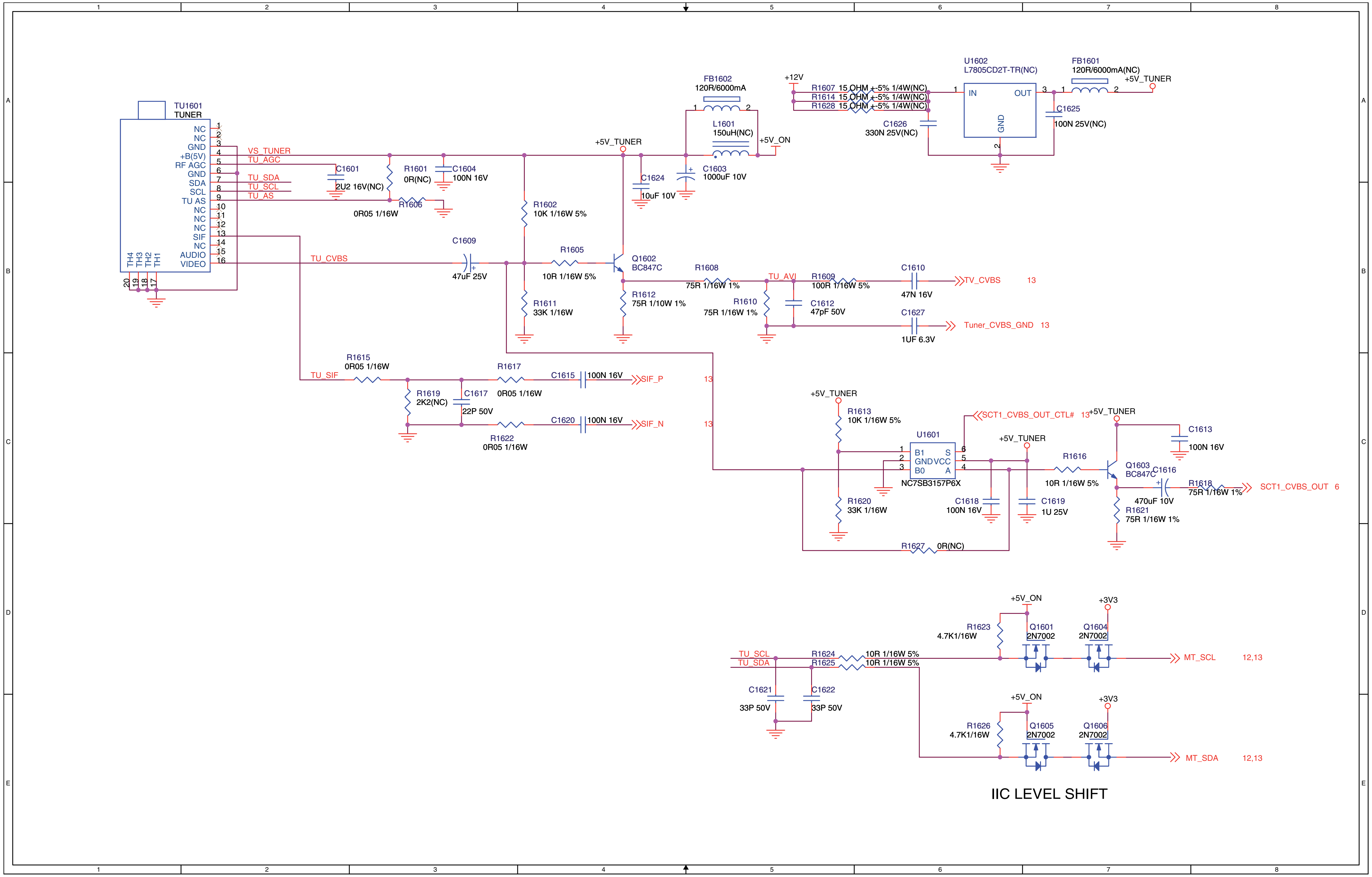


C1501	B2	C1502	A2
C1503	A1	C1504	A2
C1505	A5	C1506	C1
C1507	C1	C1508	A5
C1510	C5	C1511	D5
C1513	B7	C1514	C5
C1515	B7	C1516	B2
C1517	C5	C1518	A5
C1519	B7	C1520	C5
C1521	C4	C1522	C3
C1523	E4	C1524	C4
C1525	D2	C1526	C3
C1527	E4	C1528	E3
C1529	E3	C1530	D7
C1531	B7	C1533	D2
C1537	D7	C1538	A6
C1539	A6	C1540	A5
C1541	A6	Q1502	A2
R1501	C1	R1502	A2
R1503	A2	R1504	A3
R1505	A2	R1506	A2
R1507	B4	R1508	B2
R1509	B2	R1510	C3
R1511	C3	R1512	D4
R1513	E3	R1514	D2
R1515	E3	R1516	D2
R1517	A7	R1518	A7
R1519	D6	R1520	D6
R1521	B7	R1522	B7
R1523	B3	R1524	B3
R1525	B6	R1526	B5
R1527	D6	R1528	D6
R1529	D3	R1530	D3
R1531	A7	R1532	A7
R1533	A4	R1534	A4
R1535	A5	R1536	A6
U1501	B4	U1502	C4

18870_505_100107.eps
100308

SSB: Tuner

B06 Tuner

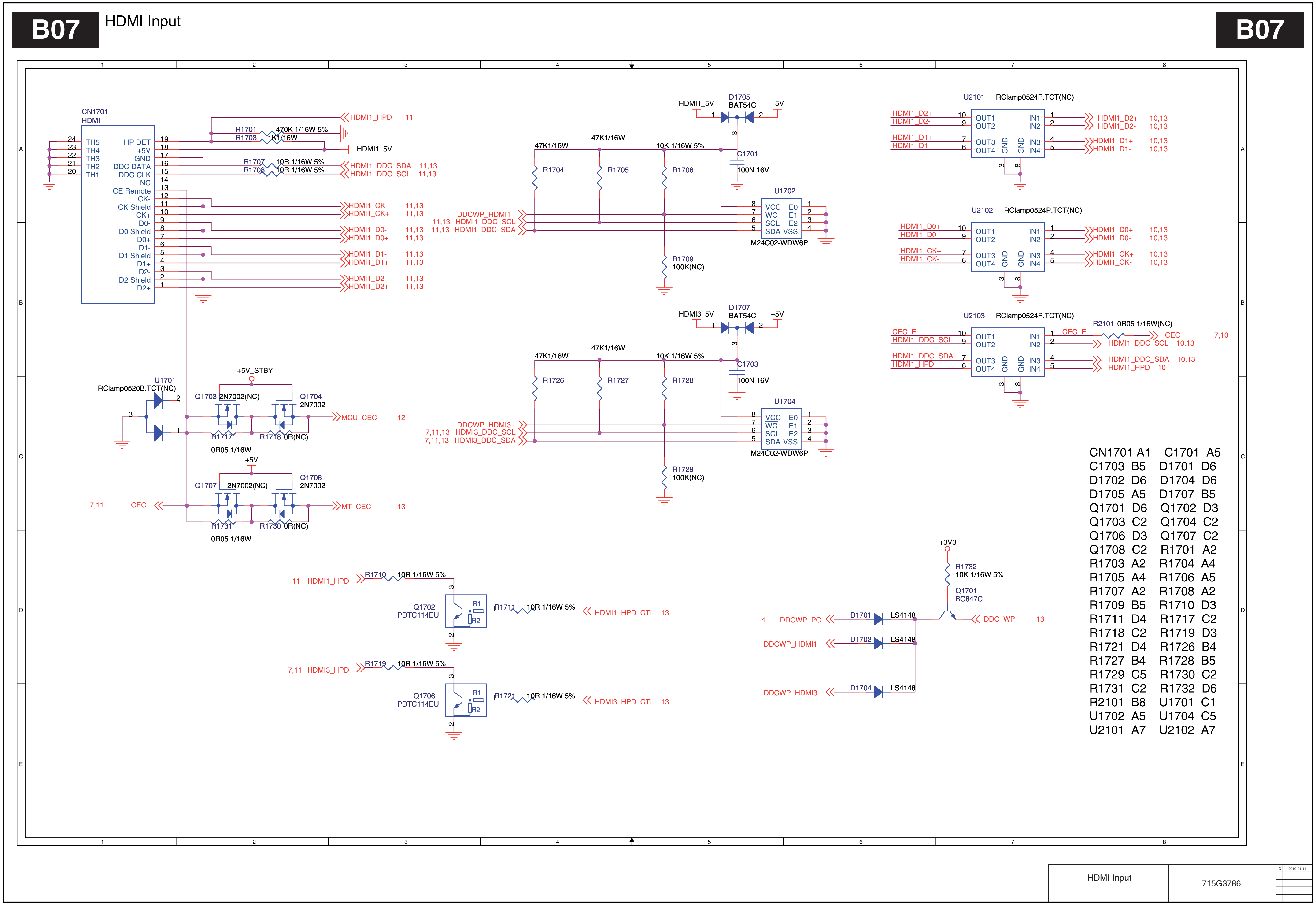


C1601	A2	C1603	A4
C1604	A3	C1609	B3
C1610	B6	C1612	B5
C1613	C7	C1615	C4
C1616	C7	C1617	C3
C1618	C6	C1619	C6
C1620	C4	C1621	D5
C1622	D5	C1624	A4
C1625	A7	C1626	A6
C1627	B6	FB1601	A7
FB1602	A5	L1601	A5
Q1601	D6	Q1602	B4
Q1603	C7	Q1604	D7
Q1605	E6	Q1606	E7
R1601	A3	R1602	B3
R1605	B4	R1606	B3
R1607	A5	R1608	B5
R1609	B5	R1610	B5
R1611	B3	R1612	B4
R1613	C5	R1614	A5
R1615	C3	R1616	C7
R1617	C3	R1618	C7
R1619	C3	R1620	C5
R1621	C7	R1622	C3
R1623	D6	R1624	D5
R1625	D5	R1626	E6
R1627	D6	R1628	A5
TU1601	A1	U1601	C6

Tuner 715G3786

18870_506_100107.eps
100308

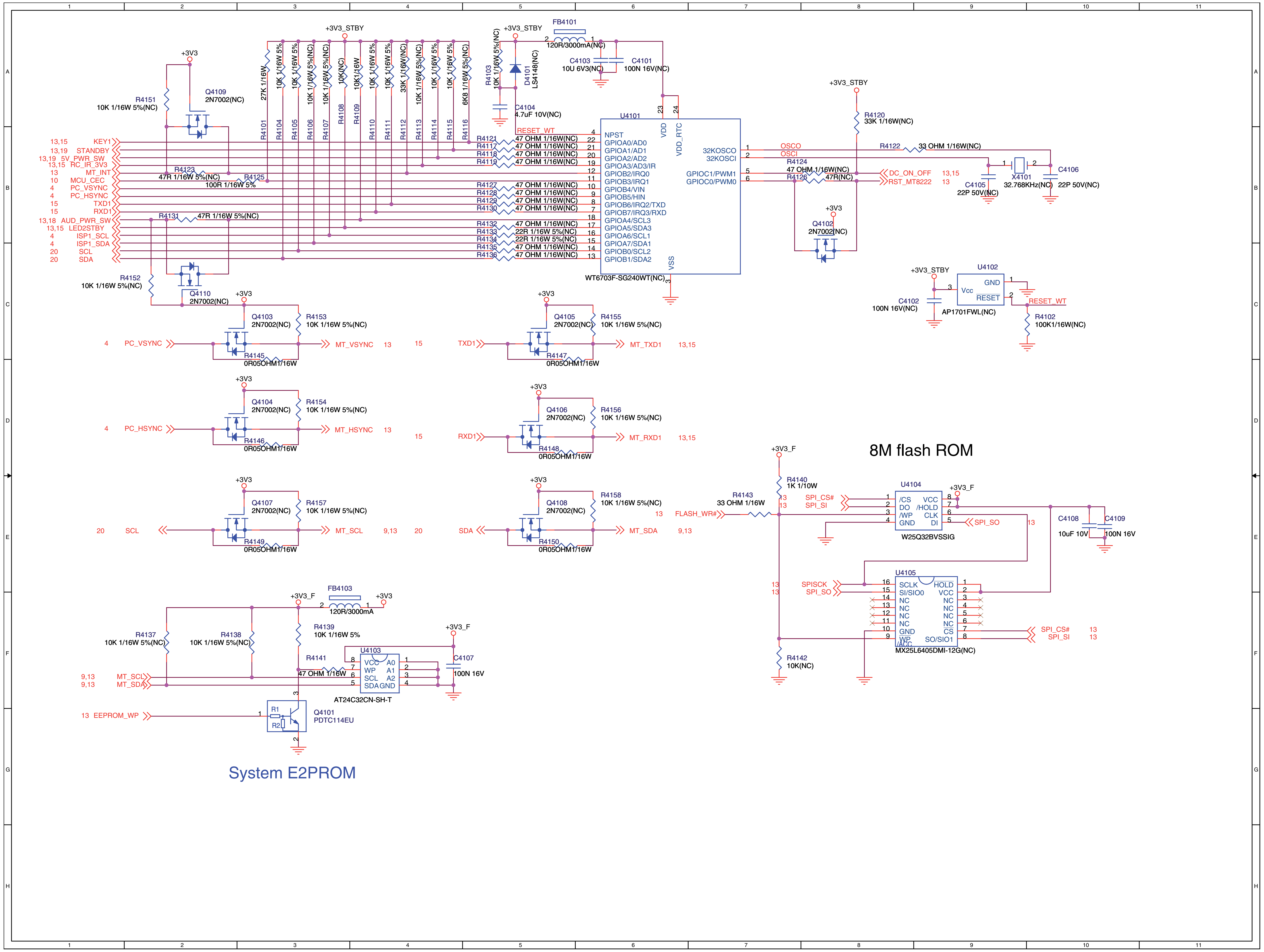
SSB: HDMI Input



18870_507_100203.eps
100203

SSB: WT6703F (Stand-by MCU)

B08 WT6703F (Stand-by MCU) **B08**



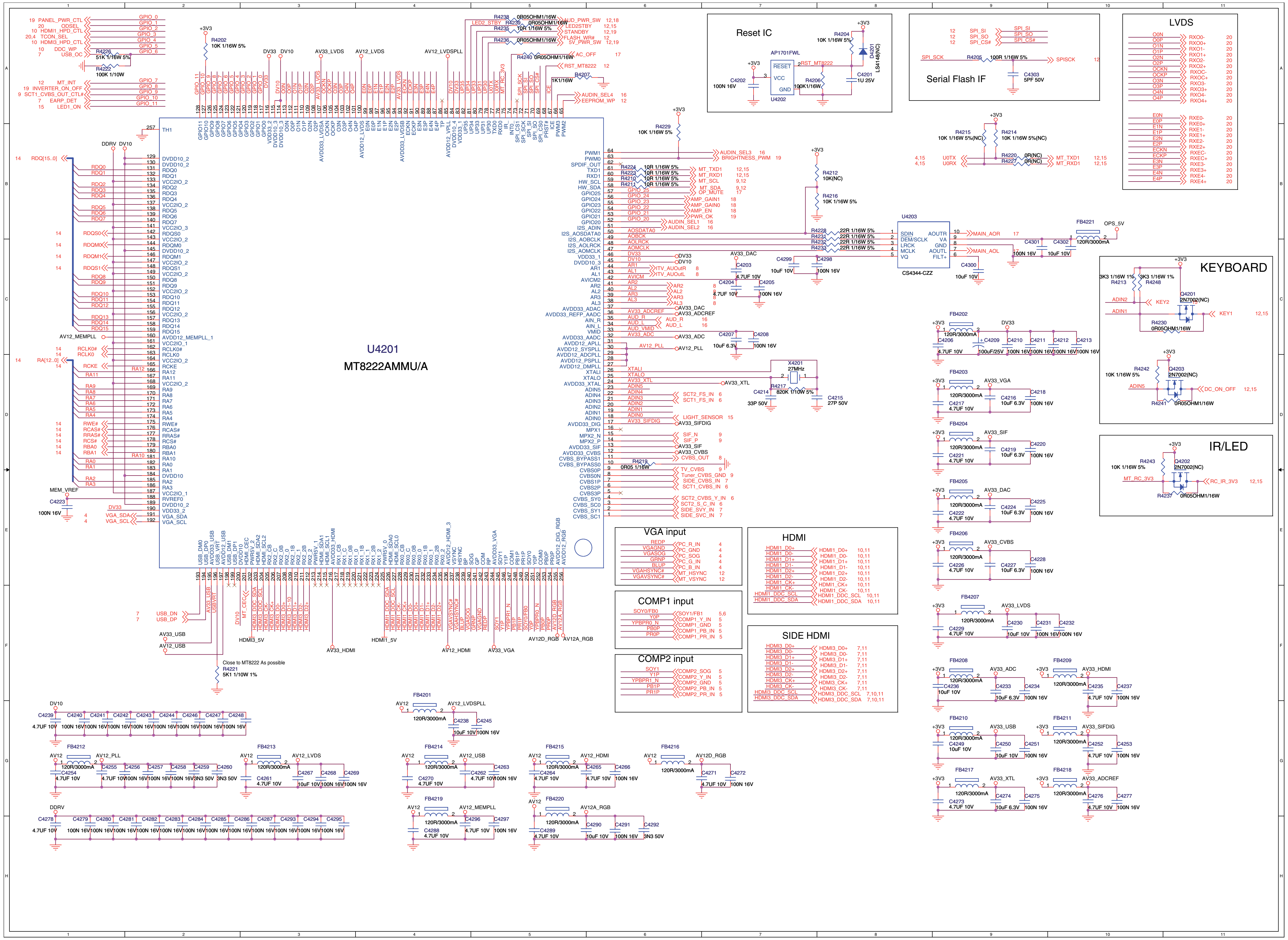
C4101	A6	C4102	C9
C4103	A6	C4104	A5
C4105	B9	C4106	B10
C4107	F4	C4108	E10
C4109	E10	D4101	A5
FB4101	A5	FB4103	E3
Q4101	F3	Q4102	B7
Q4103	C2	Q4104	D2
Q4105	C5	Q4106	D5
Q4107	E2	Q4108	E5
Q4109	A2	Q4110	C2
R4101	A3	R4102	C9
R4103	A5	R4104	A3
R4105	A3	R4106	A3
R4107	A3	R4108	A3
R4109	A3	R4110	A4
R4111	A4	R4112	A4
R4113	A4	R4114	A4
R4115	A4	R4116	A4
R4117	B5	R4118	B5
R4119	B5	R4120	A8
R4121	B5	R4122	B8
R4123	B2	R4124	B7
R4125	B2	R4126	B7
R4127	B5	R4128	B5
R4129	B5	R4130	B5
R4131	B2	R4132	B5
R4133	B5	R4134	B5
R4135	B5	R4136	C5
R4137	F2	R4138	F3
R4139	F3	R4140	D7
R4141	F3	R4142	F7
R4143	E7	R4145	C3
R4146	D3	R4147	C5
R4148	D5	R4149	E3
R4150	E5	R4151	A2
R4152	C2	R4153	C3
R4154	D3	R4155	C6
R4156	D6	R4157	E3
R4158	E6	U4101	A6
U4102	C9	U4103	F4
U4104	E8	U4105	E8

WT6703F (Stand-by MCU) 715G3786

18870_508_100203.eps
100308

SSB: MTK8222

B09 MTK8222 **B09**



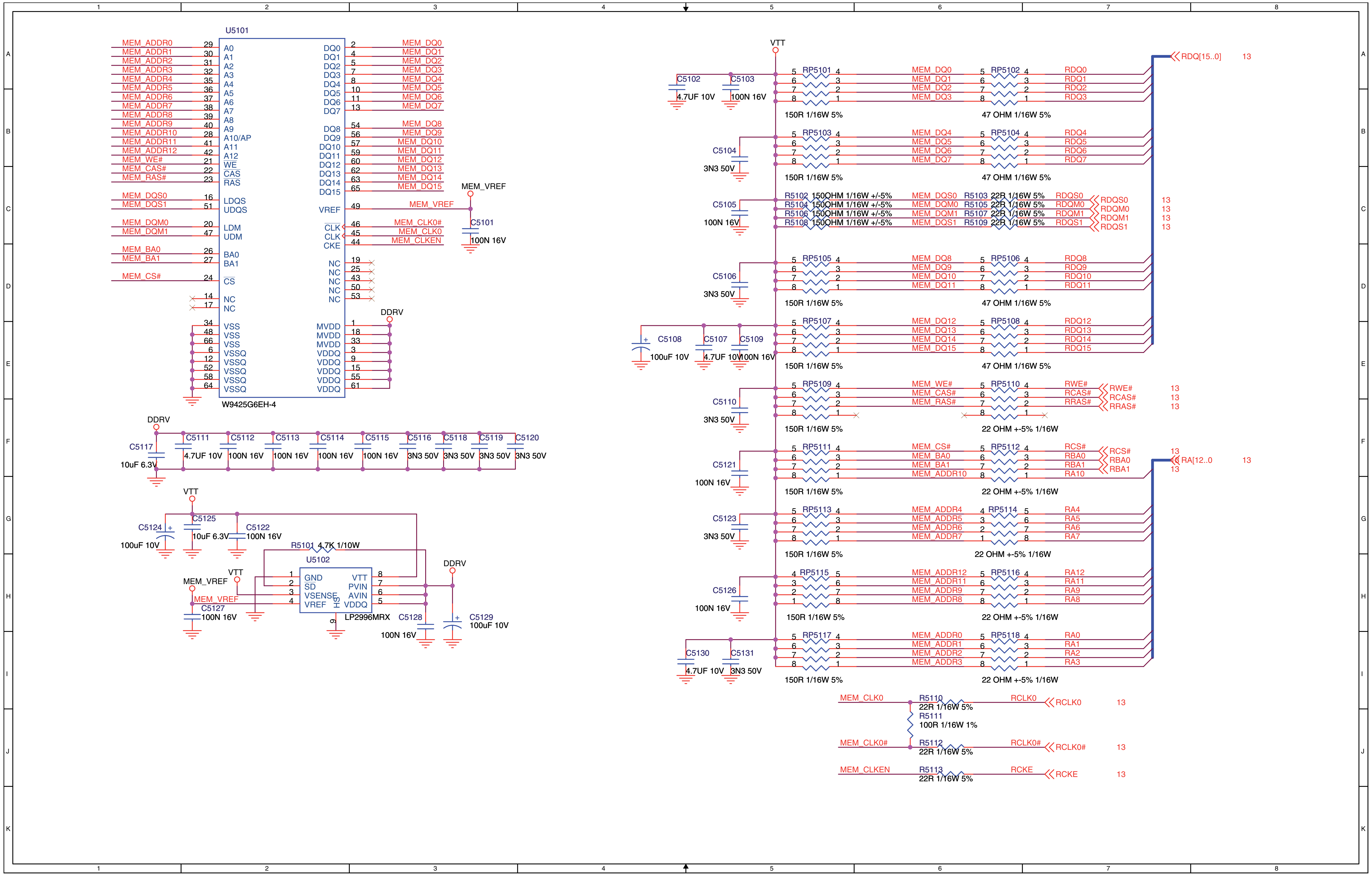
C4201 A8	C4202 A7	C4203 C7	C4204 C7
C4205 C7	C4206 C8	C4207 C7	C4208 C7
C4209 C9	C4210 C9	C4211 C9	C4212 C9
C4213 C10	C4214 D7	C4215 D7	C4216 D9
C4217 D8	C4218 D9	C4219 D9	C4220 D9
C4221 D8	C4222 E8	C4223 E1	C4224 E9
C4225 E9	C4226 E8	C4227 E9	C4228 E9
C4229 F8	C4230 F9	C4231 F9	C4232 F9
C4233 F9	C4234 F9	C4235 F10	C4236 F8
C4237 F10	C4238 G4	C4239 G1	C4240 G1
C4241 G1	C4242 G1	C4243 G2	C4244 G2
C4245 G4	C4246 G2	C4247 G2	C4248 G2
C4249 G8	C4250 G9	C4251 G9	C4252 G10
C4253 G10	C4254 G1	C4255 G1	C4256 G1
C4257 G2	C4258 G2	C4259 G2	C4260 G2
C4261 G2	C4262 G4	C4263 G5	C4264 G5
C4265 G5	C4266 G6	C4267 G3	C4268 G3
C4269 G3	C4270 G4	C4271 G6	C4272 G7
C4273 G8	C4274 G9	C4275 G9	C4276 G10
C4277 G10	C4278 G1	C4279 G1	C4280 G1
C4281 G2	C4282 G2	C4283 G2	C4284 G2
C4285 G2	C4286 G3	C4287 G3	C4288 H4
C4289 H5	C4290 H5	C4291 H6	C4292 H6
C4293 G3	C4294 G3	C4295 G3	C4296 G4
C4297 G5	C4298 C7	C4299 C7	C4300 C9
C4301 C9	C4302 C10	C4303 A9	D4201 A8
FB4201 F4	FB4202 C9	FB4203 D9	FB4204 D9
FB4205 E9	FB4206 E9	FB4207 F9	FB4208 F9
FB4209 F9	FB4210 G9	FB4211 G9	FB4212 G1
FB4213 G3	FB4214 G4	FB4215 G5	FB4216 G6
FB4217 G9	FB4218 G9	FB4219 G4	FB4220 G5
FB4221 B10	Q4201 C11	Q4202 D10	Q4203 D10
R4202 A2	R4204 A8	R4205 A9	R4206 A7
R4207 A5	R4210 B6	R4211 B6	R4212 B7
R4213 C10	R4214 B9	R4215 B9	R4216 B7
R4217 D7	R4219 D6	R4220 B9	R4221 F2
R4222 A1	R4223 B6	R4224 B6	R4226 A1
R4227 B9	R4228 B7	R4229 A6	R4230 C10
R4231 B7	R4232 B7	R4233 C7	R4235 A5
R4236 A5	R4237 E10	R4238 A5	R4239 A5
R4240 A5	R4241 D10	R4242 D10	R4243 D10
R4248 C10	U4201 A2	U4202 A7	U4203 B8

MTK8222	715G3786

18870_509_100203.eps
100308

SSB: DDR1 Memory

B10 DDR1 Memory **B10**

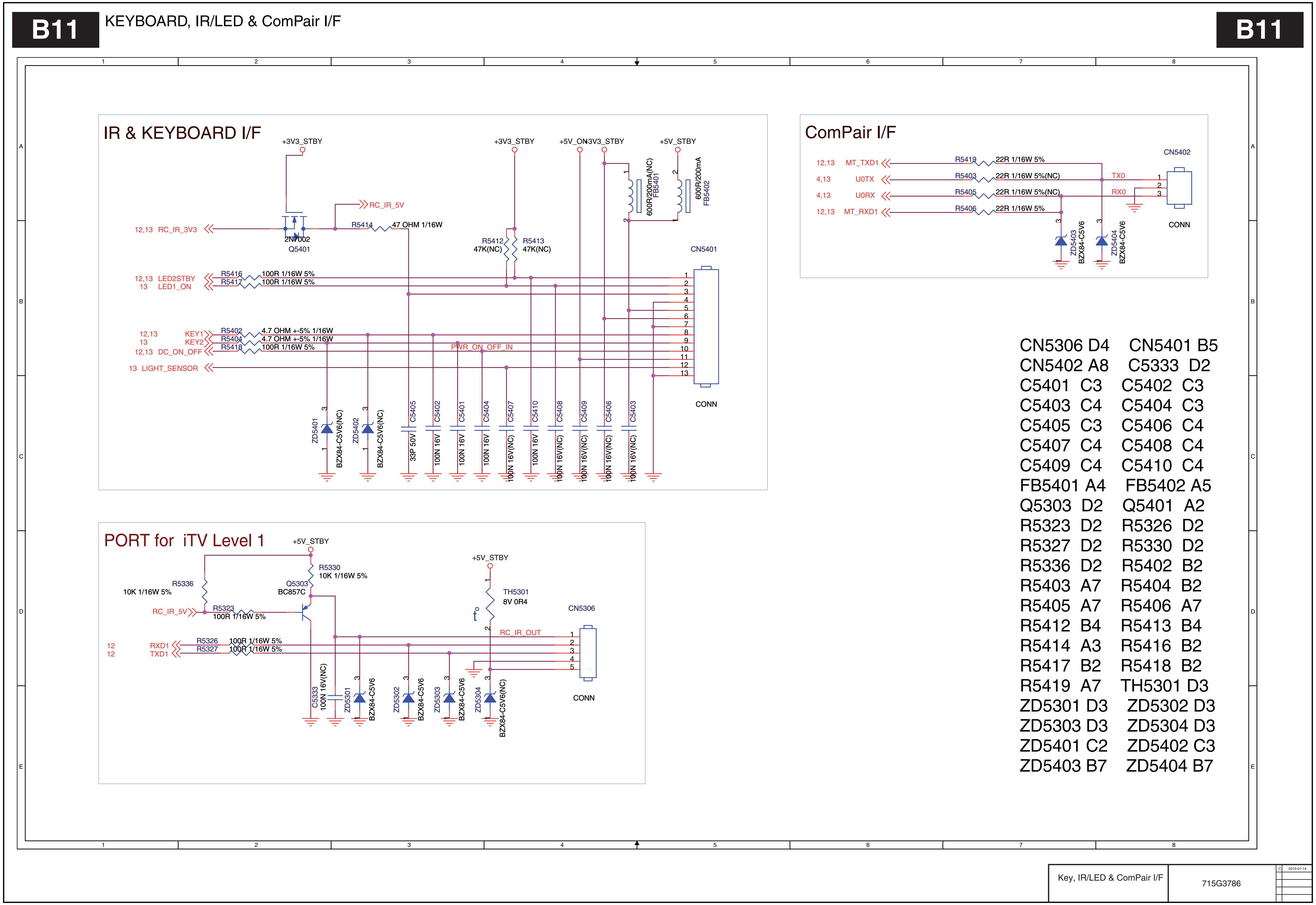


C5101	C3	C5102	A4
C5103	A5	C5104	B5
C5105	C5	C5106	D5
C5107	E5	C5108	E4
C5109	E5	C5110	E5
C5111	F1	C5112	F2
C5113	F2	C5114	F2
C5115	F3	C5116	F3
C5117	F1	C5118	F3
C5119	F3	C5120	F3
C5121	F5	C5122	G2
C5123	G5	C5124	G1
C5125	G2	C5126	H5
C5127	H2	C5128	H3
C5129	H3	C5130	I4
C5131	I5	RP5101	A5
RP5102	A6	RP5103	B5
RP5104	B6	RP5105	D5
RP5106	D6	RP5107	D5
RP5108	D6	RP5109	E5
RP5110	E6	RP5111	F5
RP5112	F6	RP5113	G5
RP5114	G6	RP5115	H5
RP5116	H6	RP5117	H5
RP5118	H6	R5101	G2
R5102	C5	R5103	C6
R5104	C5	R5105	C6
R5106	C5	R5107	C6
R5108	C5	R5109	C6
R5110	I6	R5111	I6
R5112	J6	R5113	J6
U5101	A2	U5102	H2

DDR1 Memory 715G3786

18870_510_100203.eps
100308

SSB: KEYBOARD, IR/LED & ComPair I/F

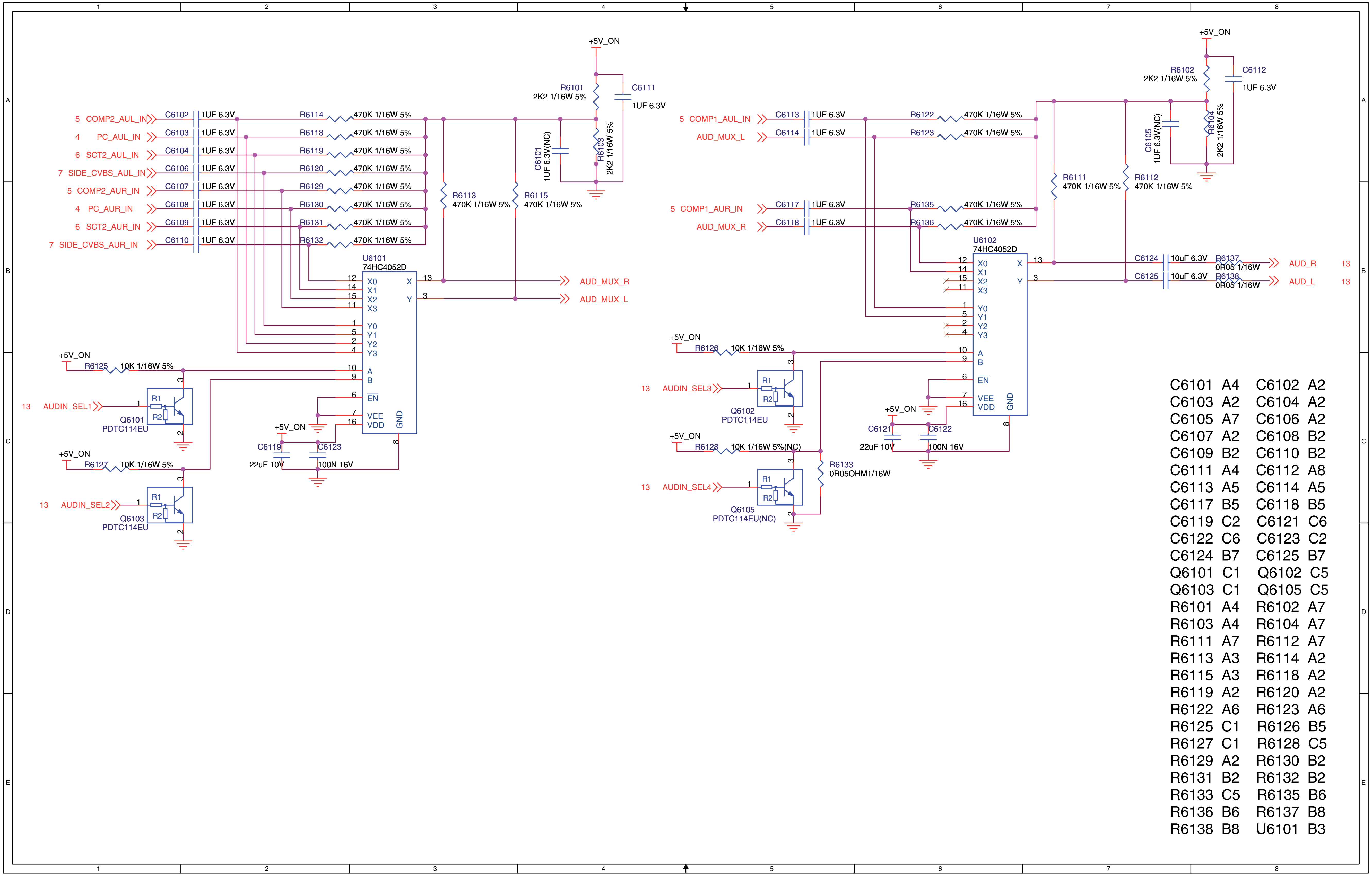


CN5306	D4	CN5401	B5
CN5402	A8	C5333	D2
C5401	C3	C5402	C3
C5403	C4	C5404	C3
C5405	C3	C5406	C4
C5407	C4	C5408	C4
C5409	C4	C5410	C4
FB5401	A4	FB5402	A5
Q5303	D2	Q5401	A2
R5323	D2	R5326	D2
R5327	D2	R5330	D2
R5336	D2	R5402	B2
R5403	A7	R5404	B2
R5405	A7	R5406	A7
R5412	B4	R5413	B4
R5414	A3	R5416	B2
R5417	B2	R5418	B2
R5419	A7	TH5301	D3
ZD5301	D3	ZD5302	D3
ZD5303	D3	ZD5304	D3
ZD5401	C2	ZD5402	C3
ZD5403	B7	ZD5404	B7

18870_511_100203.eps
100308

SSB: Audio Switch

B12 Audio Switch



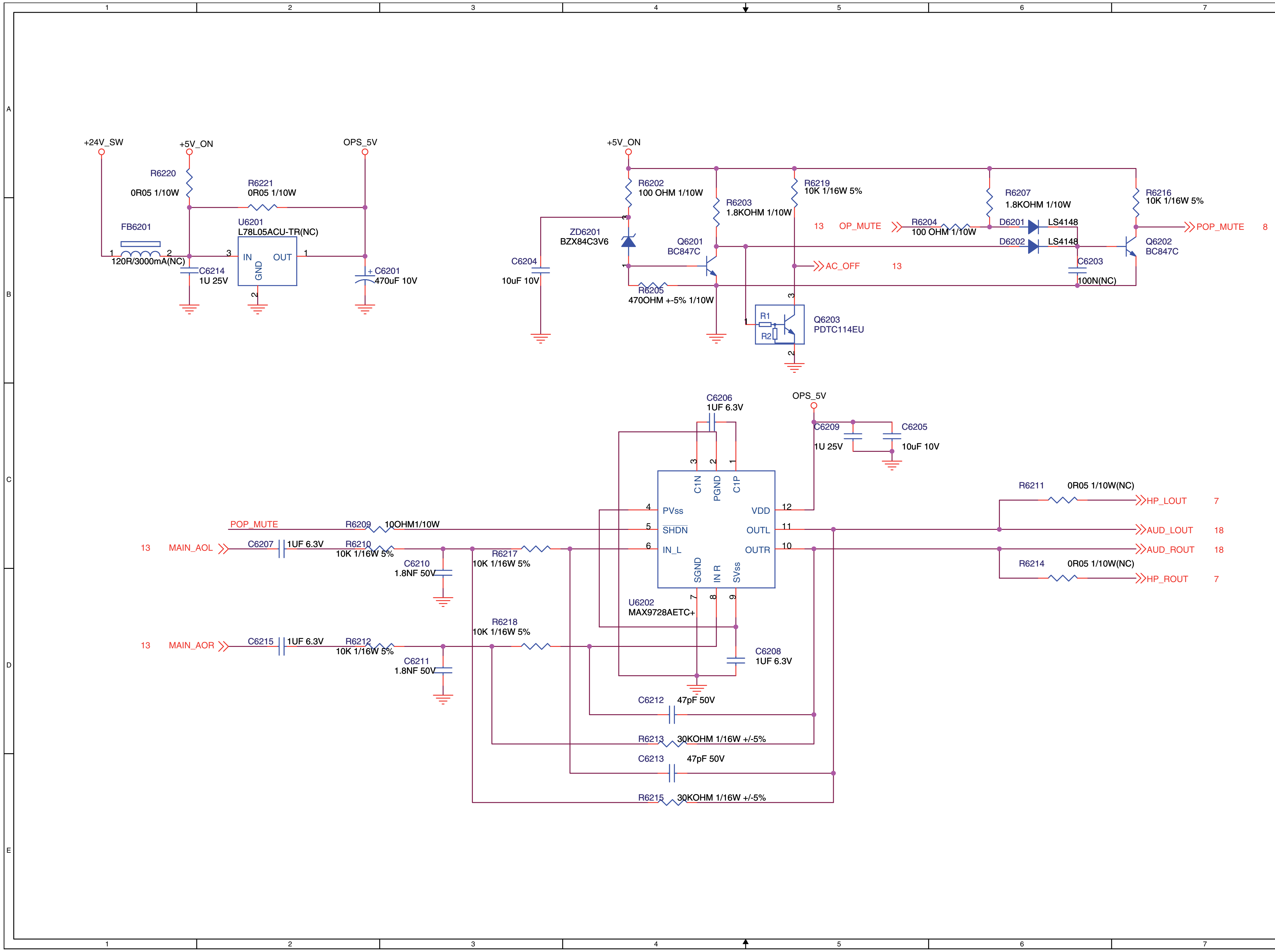
C6101	A4	C6102	A2
C6103	A2	C6104	A2
C6105	A7	C6106	A2
C6107	A2	C6108	B2
C6109	B2	C6110	B2
C6111	A4	C6112	A8
C6113	A5	C6114	A5
C6117	B5	C6118	B5
C6119	C2	C6121	C6
C6122	C6	C6123	C2
C6124	B7	C6125	B7
Q6101	C1	Q6102	C5
Q6103	C1	Q6105	C5
R6101	A4	R6102	A7
R6103	A4	R6104	A7
R6111	A7	R6112	A7
R6113	A3	R6114	A2
R6115	A3	R6118	A2
R6119	A2	R6120	A2
R6122	A6	R6123	A6
R6125	C1	R6126	B5
R6127	C1	R6128	C5
R6129	A2	R6130	B2
R6131	B2	R6132	B2
R6133	C5	R6135	B6
R6136	B6	R6137	B8
R6138	B8	U6101	B3

Audio Switch | 715G3786

18870_512_100203.eps
100308

SSB: AUDIO Preamplifier

B13 Audio Preamplifier **B13**



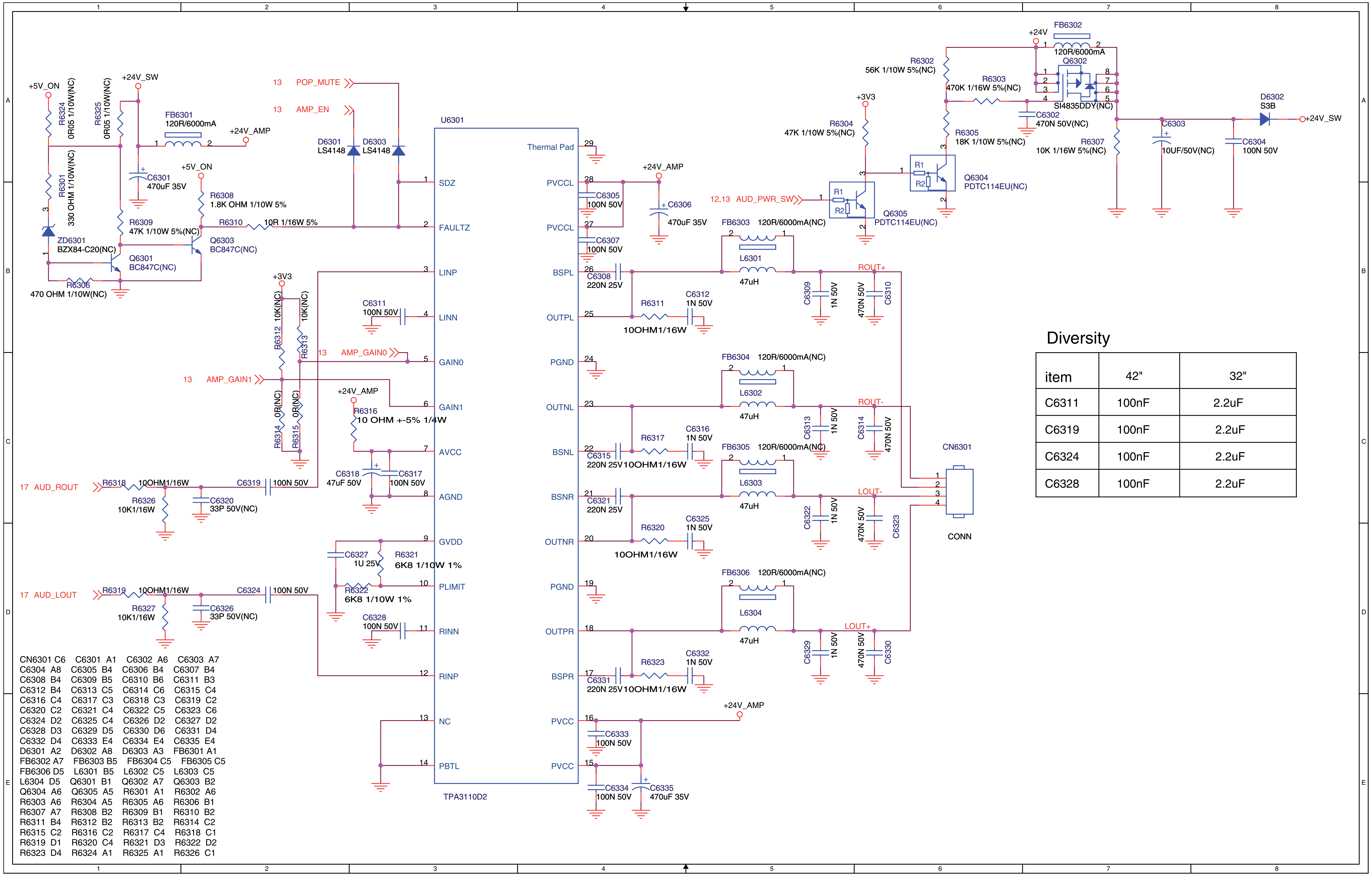
C6201	B2	C6203	B6
C6204	B3	C6205	C5
C6206	C4	C6207	C2
C6208	D4	C6209	C5
C6210	C3	C6211	D3
C6212	D4	C6213	D4
C6214	B1	C6215	D2
D6201	B6	D6202	B6
FB6201	B1	Q6201	B4
Q6202	B6	Q6203	B5
R6202	A4	R6203	A4
R6204	B6	R6205	B4
R6207	A6	R6209	C2
R6210	C2	R6211	C6
R6212	D2	R6213	D4
R6214	C6	R6215	E4
R6216	A7	R6217	C3
R6218	D3	R6219	A5
R6220	A1	R6221	A2
U6201	B2	U6202	C4

Audio Preamplifier 715G3786

18870_513_100204.eps
100204

SSB: Audio Amplifier

B14 Audio Amplifier



Diversity

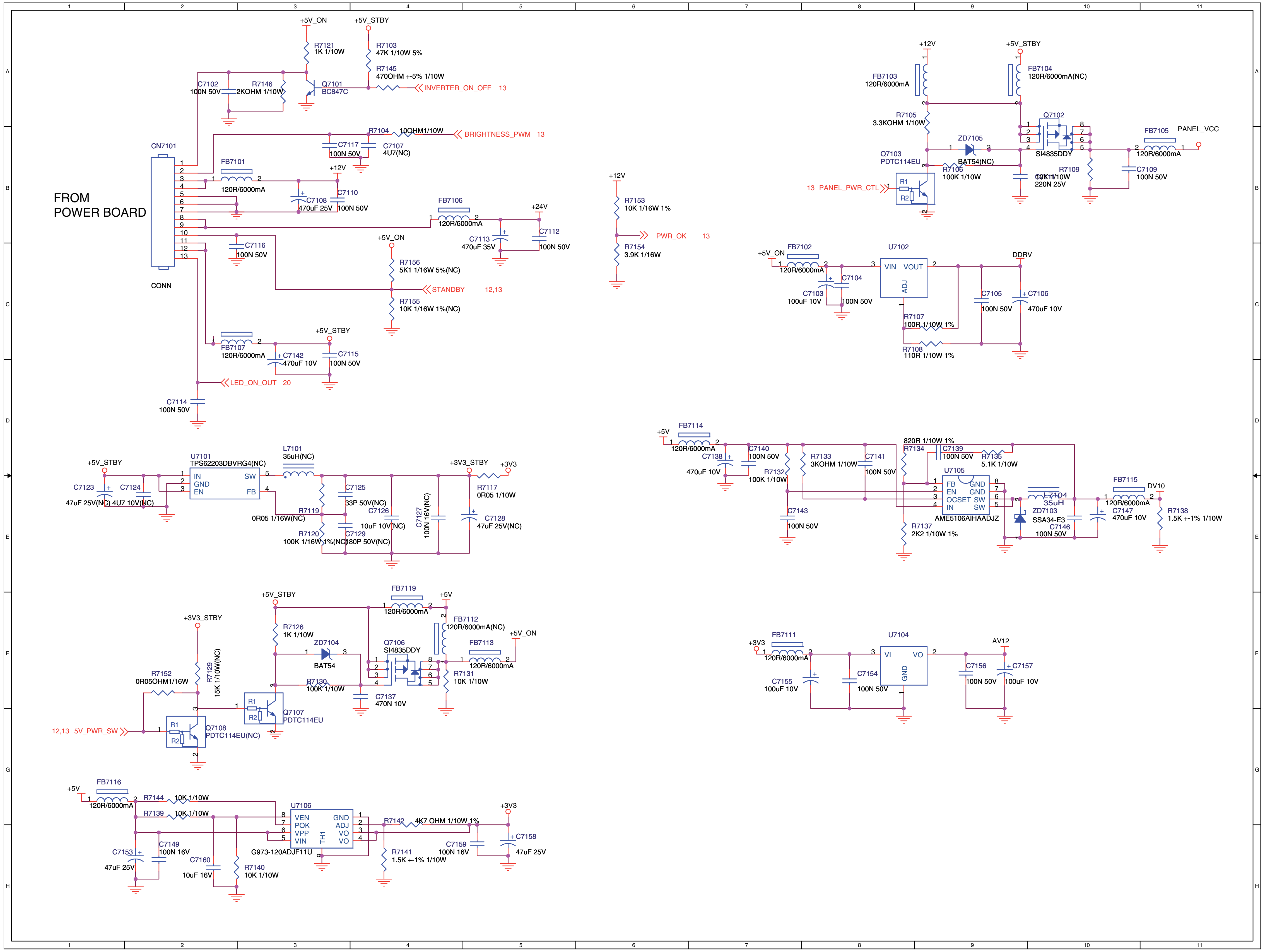
item	42"	32"
C6311	100nF	2.2uF
C6319	100nF	2.2uF
C6324	100nF	2.2uF
C6328	100nF	2.2uF

18870_514_100204.eps
100204

SSB: DC/DC Power

B15 DC/DC Power

B15



CN7101 B2 C7102 A2
C7103 C8 C7104 C8
C7105 C9 C7106 C9
C7107 B4 C7108 B3
C7109 B10 C7110 B3
C7111 B9 C7112 B5
C7113 B5 C7114 D2
C7115 C3 C7116 B2
C7117 B3 C7123 E1
C7124 E2 C7125 E3
C7126 E4 C7127 E4
C7128 E4 C7129 E3
C7137 F3 C7138 D7
C7139 D9 C7140 D7
C7141 D8 C7142 C3
C7143 E7 C7146 E10
C7147 E10 C7149 H2
C7153 H2 C7154 F8
C7155 F7 C7156 F9
C7157 F9 C7158 G5
C7159 H5 C7160 H2
FB7101 B2 FB7102 C7
FB7103 A8 FB7104 A9
FB7105 B10 FB7106 B4
FB7107 C2 FB7111 F7
FB7112 F4 FB7113 F5
FB7114 D6 FB7115 E10
FB7116 G1 FB7119 E4
L7101 D3 L7104 E9
Q7101 A3 Q7102 A9
Q7103 B8 Q7106 F4
Q7107 F3 Q7108 F2
R7103 A4 R7104 A4
R7105 A8 R7106 B9
R7107 C8 R7108 C8
R7109 B10 R7117 D5
R7119 E3 R7120 E3
R7121 A3 R7126 F3
R7129 F2 R7130 F3
R7131 F4 R7132 D7
R7133 D7 R7134 D8
R7135 D9 R7137 E8
R7138 E10 R7139 G2
R7140 H2 R7141 H4
R7142 G4 R7144 G2
R7145 A4 R7146 A3
R7152 F2 R7153 B6
R7154 B6 R7155 C4
R7156 C4 U7101 D2
U7102 C8 U7104 F8
U7105 D9 U7106 G3
ZD7103 E9 ZD7104 F3

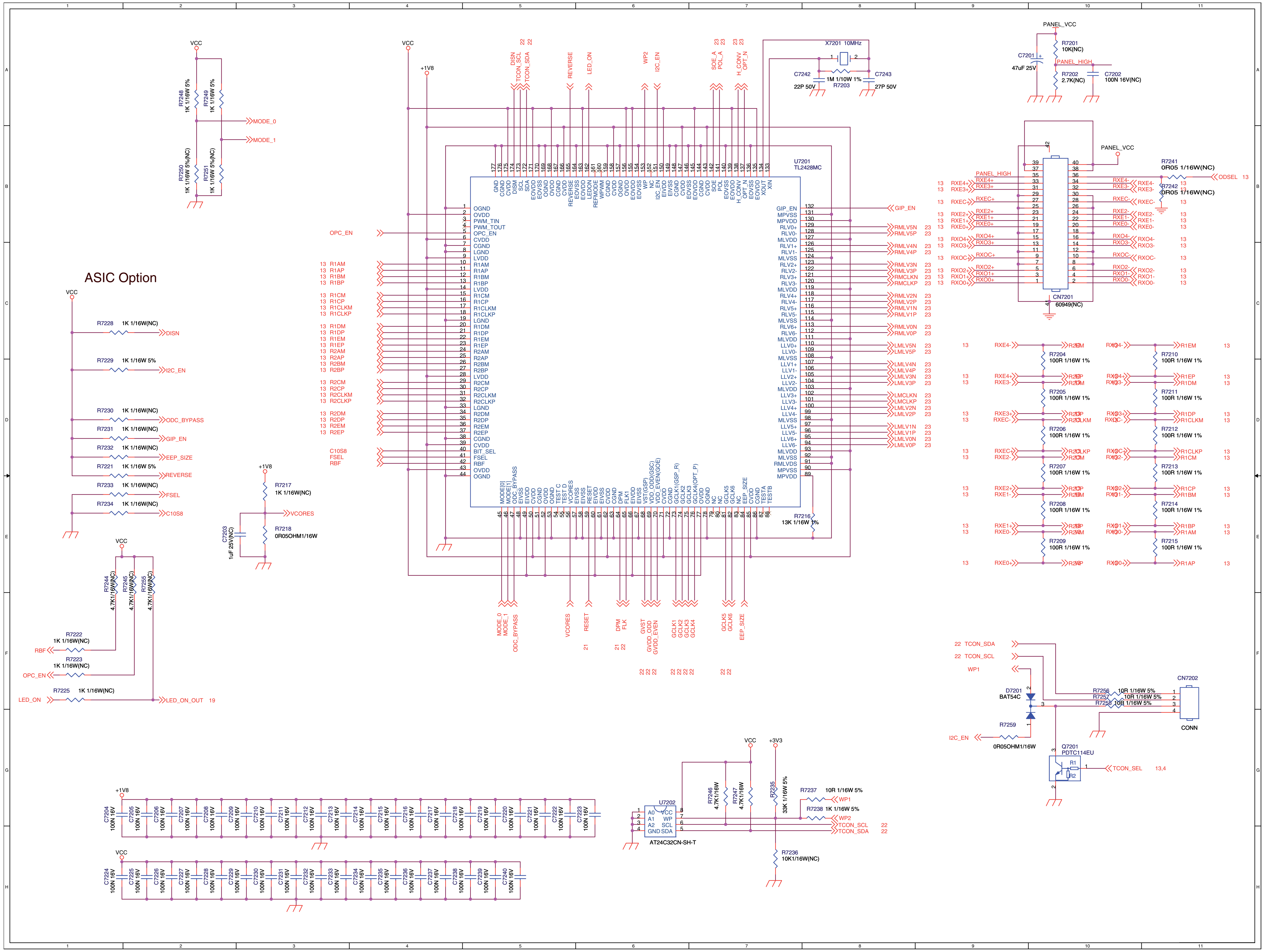
DC/DC Power | 715G3786

18870_515_100204.eps
100204

SSB: T-CON, LCD Panel I/F

B16 TCON, LCD Panel I/F

B16



CN7201 B10	CN7202 F11	C7201 A9	C7202 A10
C7203 E2	C7204 G1	C7205 G2	C7206 G2
C7207 G2	C7208 G2	C7209 G3	C7210 G3
C7211 G3	C7212 G3	C7213 G3	C7214 G4
C7215 G4	C7216 G4	C7217 G4	C7218 G4
C7219 G5	C7220 G5	C7221 G5	C7222 G5
C7223 G6	C7224 H1	C7225 H2	C7226 H2
C7227 H2	C7228 H2	C7229 H3	C7230 H3
C7231 H3	C7232 H3	C7233 H3	C7234 H4
C7235 H4	C7236 H4	C7237 H4	C7238 H4
C7239 H5	C7240 H5	C7242 A8	C7243 A8
D7201 F9	Q7201 G10	R7201 A10	R7202 A10
R7203 A8	R7204 C9	R7205 D9	R7206 D9
R7207 D9	R7208 E9	R7209 E9	R7210 C10
R7211 D10	R7212 D10	R7213 D10	R7214 E10
R7215 E10	R7216 E7	R7217 E3	R7218 E3
R7221 D1	R7222 F1	R7223 F1	R7225 F1
R7228 C1	R7229 D1	R7230 D1	R7231 D1
R7232 D1	R7233 E1	R7234 E1	R7235 G7
R7236 H7	R7237 G7	R7238 G7	R7241 B11
R7242 B11	R7244 E1	R7245 E2	R7246 G7
R7247 G7	R7248 A2	R7249 A2	R7250 B2
R7251 B2	R7255 E2	R7256 F10	R7257 F10
R7258 F10	R7259 G9	U7201 B5	U7202 G6

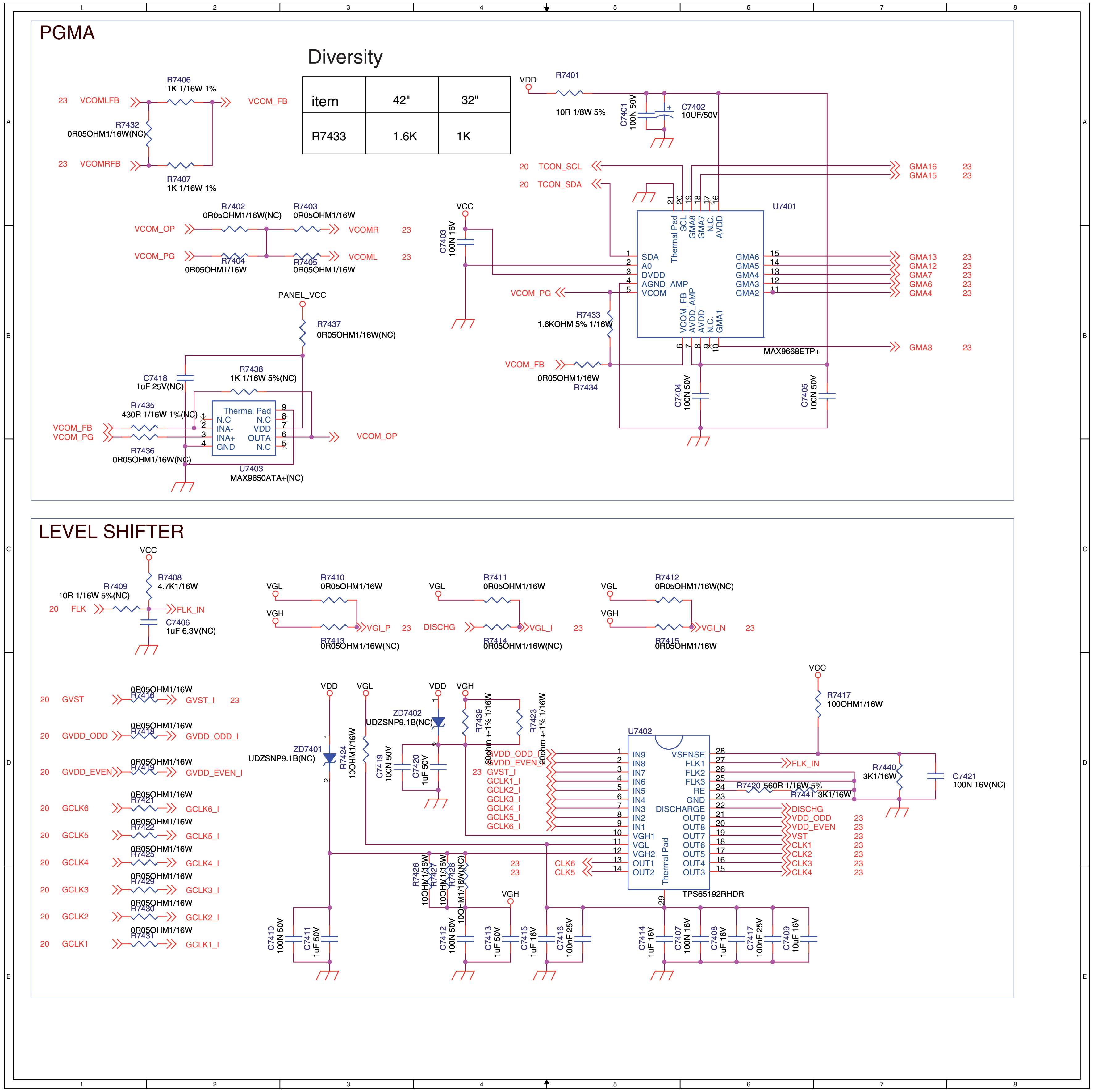
TCON, LCD Panel I/F 715G3786

18870_516_100204.eps
100308

SSB: T-CON DC/DC

B17 TCON DC/DC

B17



C7401 A5
C7402 A5
C7403 B4
C7404 B6
C7405 B6
C7406 C1
C7407 E6
C7408 E6
C7409 E6
C7410 E3
C7411 E3
C7412 E4
C7413 E4
C7414 E5
C7415 E4
C7416 E5
C7417 E6
C7418 B2
C7419 D3
C7420 D4
C7421 D7
R7401 A5
R7402 A2
R7403 A3
R7404 B2
R7405 B3
R7406 A2
R7407 A2
R7408 C1
R7409 C1
R7410 C3
R7411 C4
R7412 C5
R7413 C3
R7414 C4
R7415 C5
R7416 D1
R7417 D6
R7418 D1
R7419 D1
R7420 D6
R7421 D1
R7422 D1
R7423 D4
R7424 D3
R7425 D1
R7426 D4
R7427 D4
R7428 D4
R7429 E1
R7430 E1
R7431 E1
R7432 A1
R7433 B5
R7434 B5
R7435 B1
R7436 B1
R7437 B3
R7438 B2
R7439 D4
R7440 D7
R7441 D6
U7401 A5
U7402 D5
U7403 B2
ZD7401 D3
ZD7402 D4

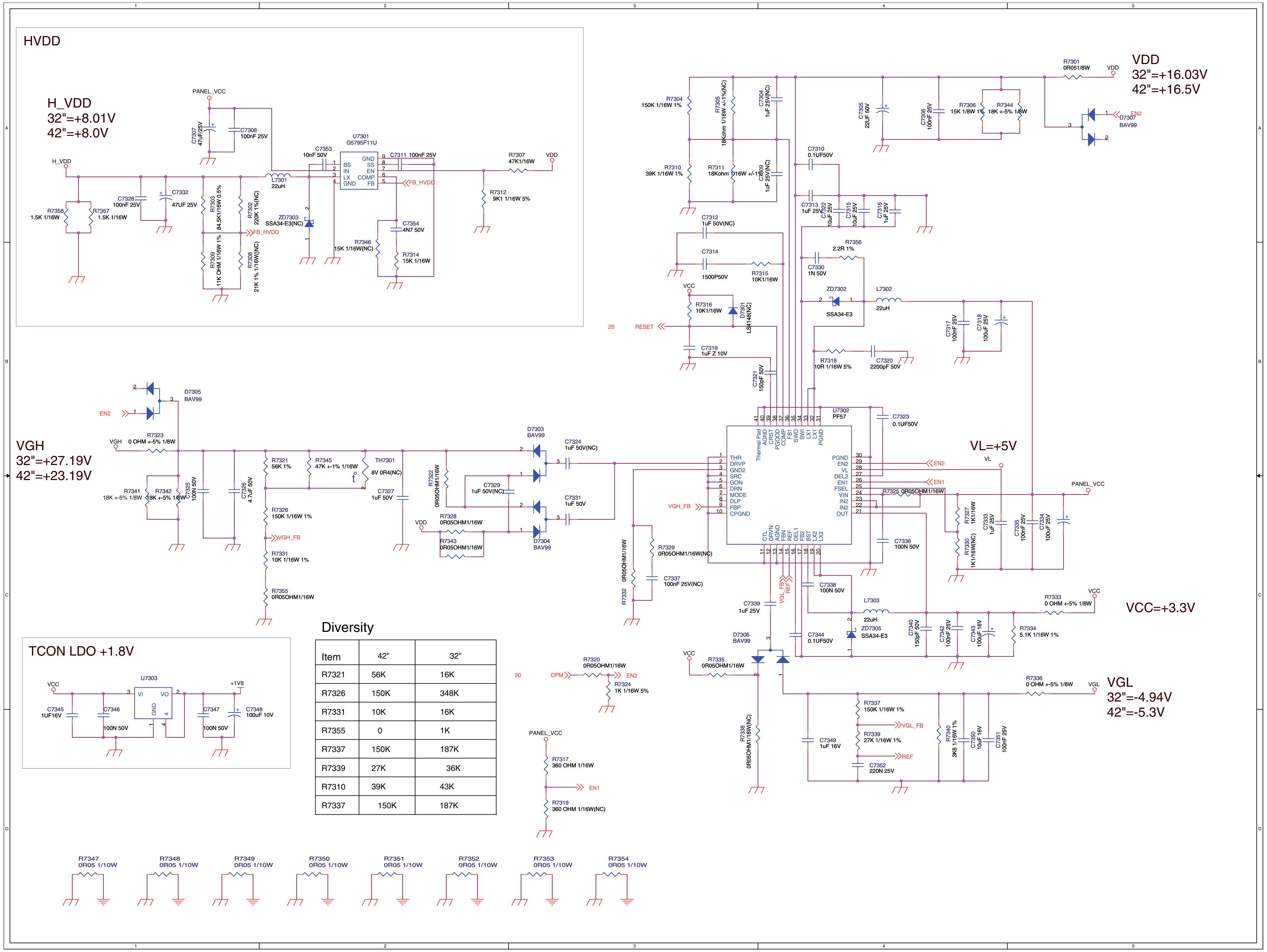
TCON DC/DC	715G3786

18870_517_10020.eps
100308

SSB: T-CON TGMA , Level-Shifter

B18 TCON TGMA, Level-shifter

B18



Diversity

Item	42"	32"
R7321	56K	16K
R7326	150K	348K
R7331	10K	16K
R7355	0	1K
R7337	150K	187K
R7339	27K	36K
R7310	39K	43K
R7337	150K	187K

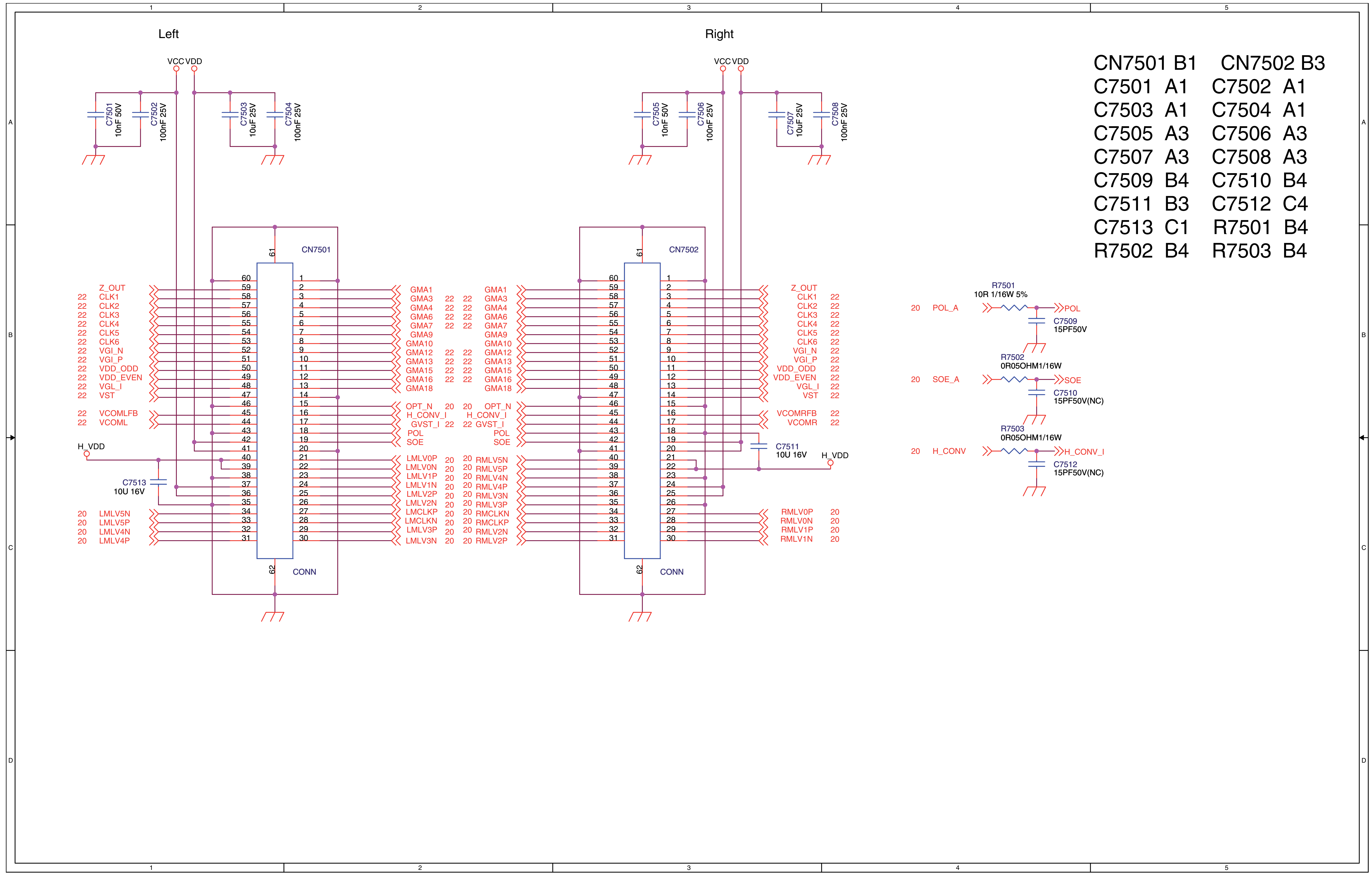
C7304 A4	C7305 A4
C7306 A4	C7307 A1
C7308 A1	C7309 A4
C7310 A4	C7311 A2
C7312 A3	C7313 A4
C7314 B3	C7315 A4
C7316 A4	C7317 B4
C7318 B4	C7319 B3
C7320 B4	C7321 B3
C7322 A4	C7323 B4
C7324 B3	C7325 C1
C7326 C1	C7327 C2
C7328 A1	C7329 C2
C7330 B4	C7331 C3
C7332 A1	C7333 C4
C7334 C5	C7335 C5
C7336 C4	C7337 C3
C7338 C4	C7339 C3
C7340 C4	C7342 C4
C7343 C4	C7344 C4
C7345 C1	C7346 C1
C7347 C1	C7348 C1
C7349 D4	C7350 D4
C7351 D4	C7352 D4
C7353 A2	C7354 A2
D7301 B3	D7303 B3
D7304 C3	D7305 B1
D7306 C3	D7307 A5
L7301 A2	L7302 B4
L7303 C4	R7301 A5
R7302 A1	R7303 A1
R7304 A3	R7305 A3
R7306 A4	R7307 A2
R7308 B1	R7309 B1
R7310 A3	R7311 A3
R7312 A2	R7314 B2
R7315 B3	R7316 B3
R7317 D3	R7318 B4
R7319 D3	R7320 C3
R7321 B1	R7322 B2
R7323 B1	R7324 C3
R7325 C4	R7326 C1
R7327 C4	R7328 C2
R7329 C3	R7330 C4
R7331 C1	R7332 C3
R7333 C5	R7334 C4
R7335 C3	R7336 C5
R7337 C4	R7338 D3
R7339 D4	R7340 D4
R7341 C1	R7342 C1
R7343 C2	R7344 A4
R7345 B2	R7346 A2
R7347 D1	R7348 D1
R7349 D1	R7350 D2
R7351 D2	R7352 D2
R7353 D3	R7354 D3
R7355 C1	R7356 B4
R7357 A1	R7358 A1
TH7301 B2	U7301 A2
U7302 B3	U7303 C1
ZD7302 B4	ZD7303 A2

TCON TGMA, Level-shifter | 715G3786

18870_518_10020.eps
100308

SSB: T-CON Mini-LVDS I/F

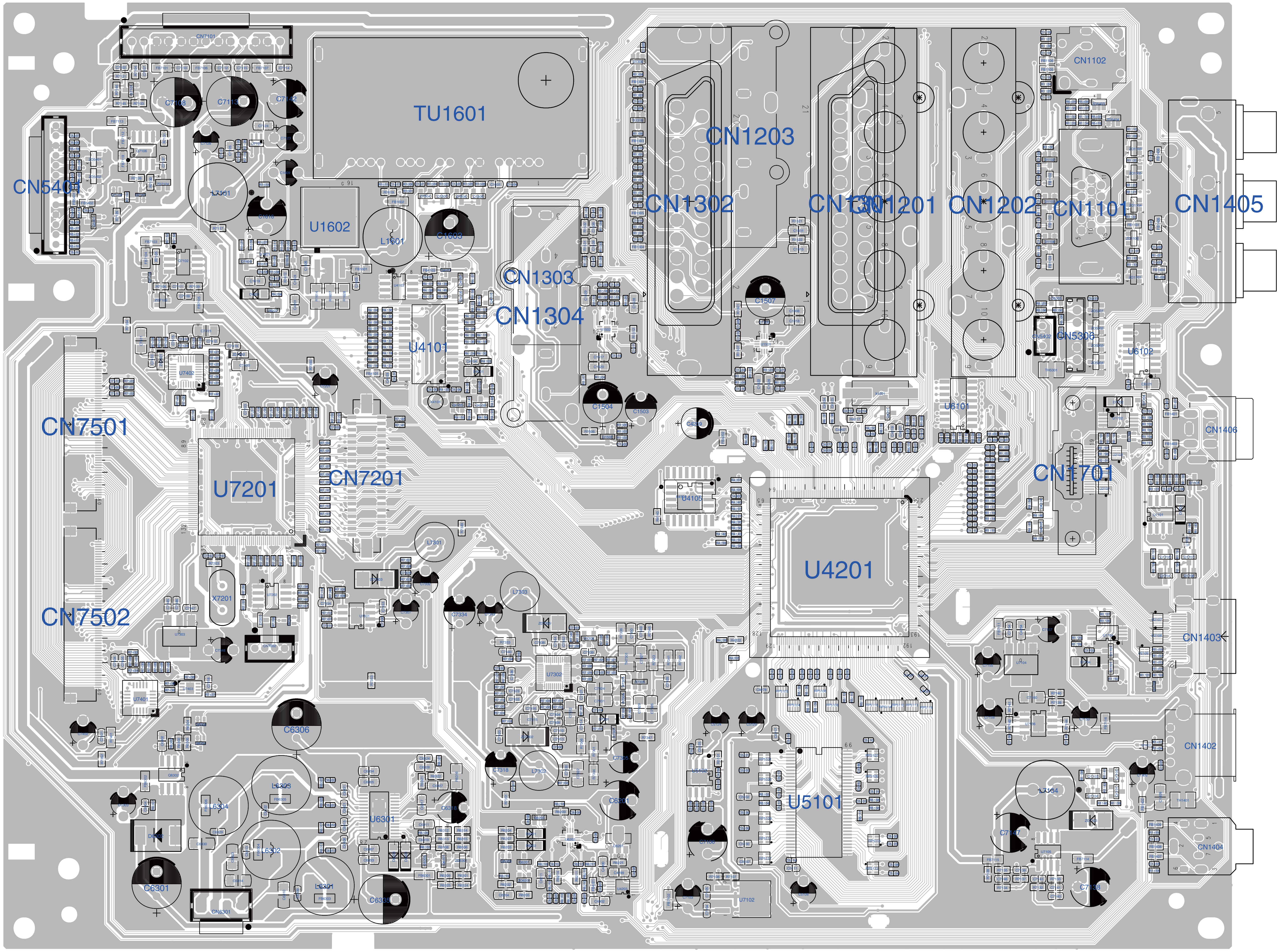
B19 TCON Mini-LVDS I/F **B19**



TCON Mini-LVDS I/F	715G3786

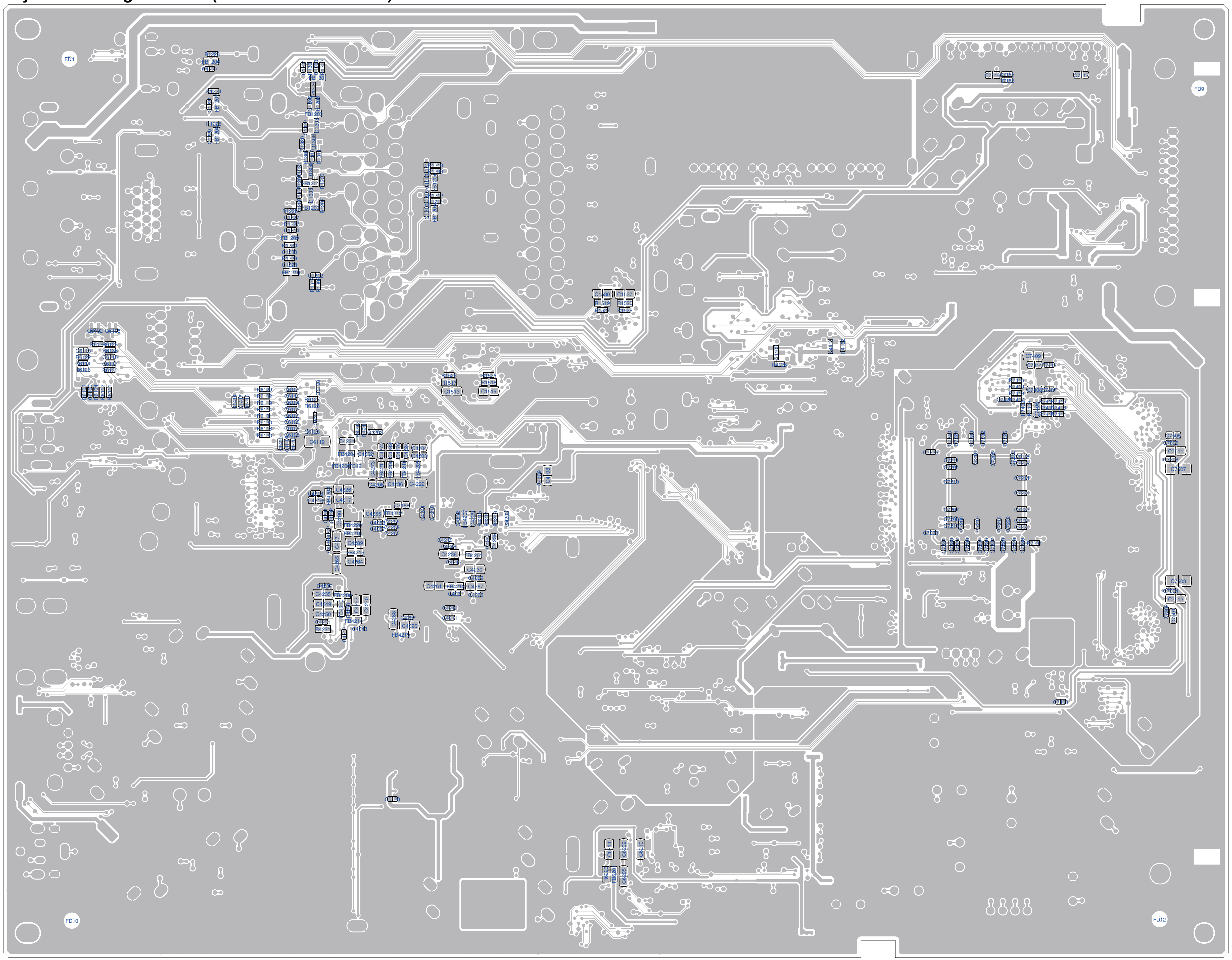
18870_519_10020.eps
100204

Layout Small Signal Board (Overview Top Side)



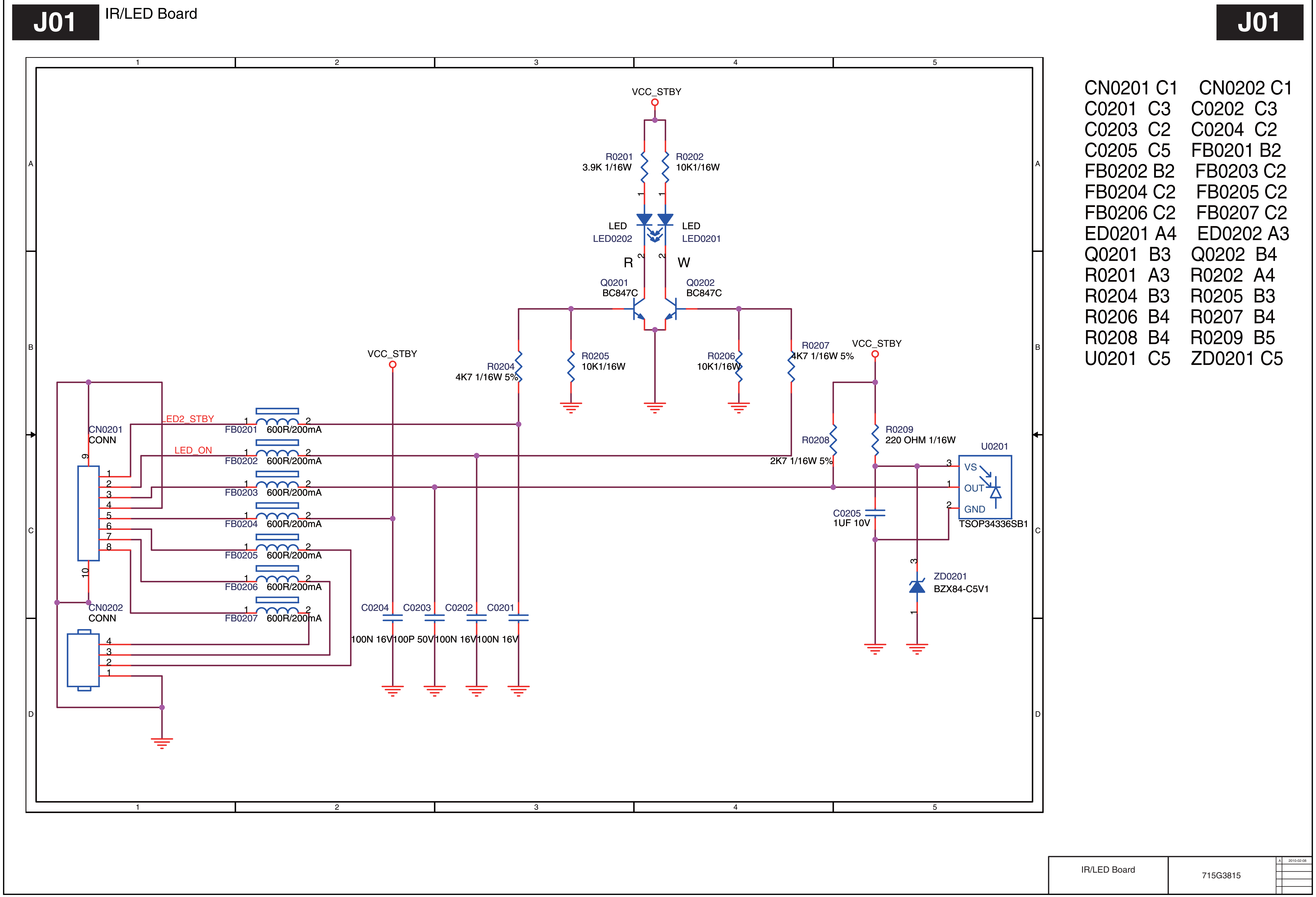
18870_523_100208.eps
100308

Layout Small Signal Board (Overview Bottom Side)



18870_524_100208.eps
100308

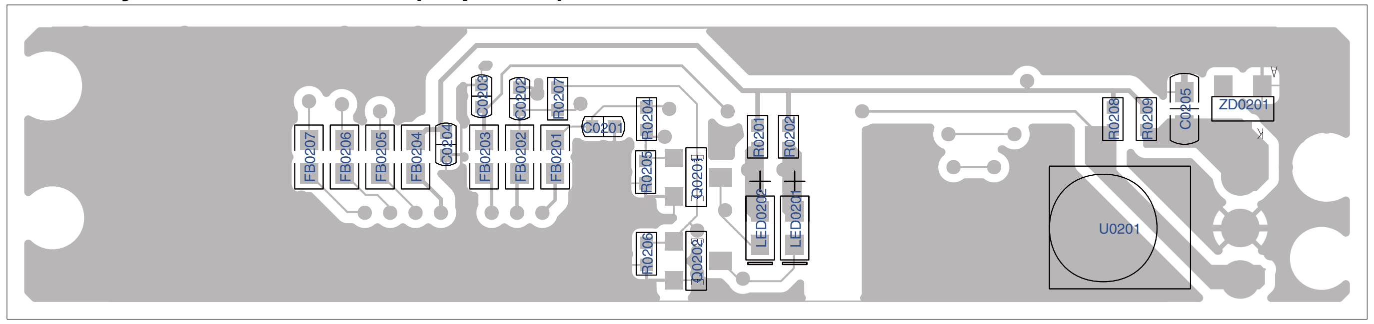
IR/LED Board



CN0201 C1 CN0202 C1
C0201 C3 C0202 C3
C0203 C2 C0204 C2
C0205 C5 FB0201 B2
FB0202 B2 FB0203 C2
FB0204 C2 FB0205 C2
FB0206 C2 FB0207 C2
ED0201 A4 ED0202 A3
Q0201 B3 Q0202 B4
R0201 A3 R0202 A4
R0204 B3 R0205 B3
R0206 B4 R0207 B4
R0208 B4 R0209 B5
U0201 C5 ZD0201 C5

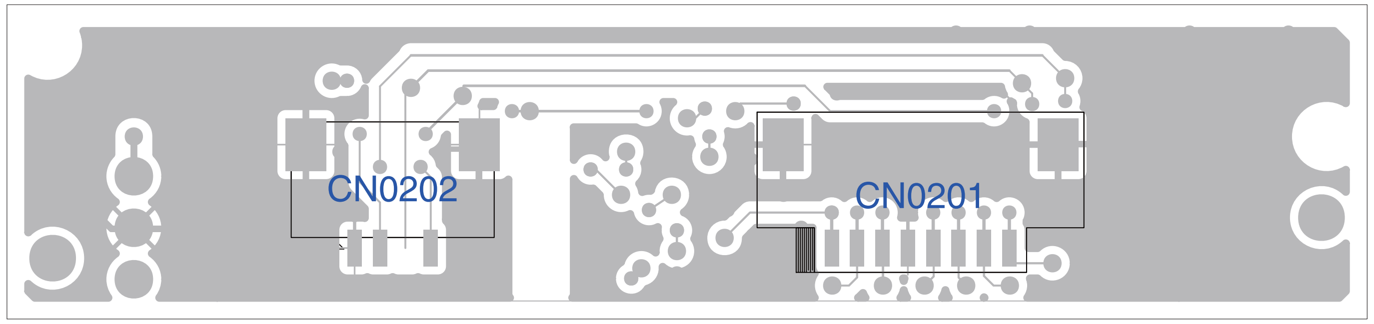
18870_520_100208.eps
100616

Layout IR/LED Board (Top Side)



18870_521_100208.eps
100308

Layout IR/LED Board (Bottom Side)



18870_522_100208.eps
100308

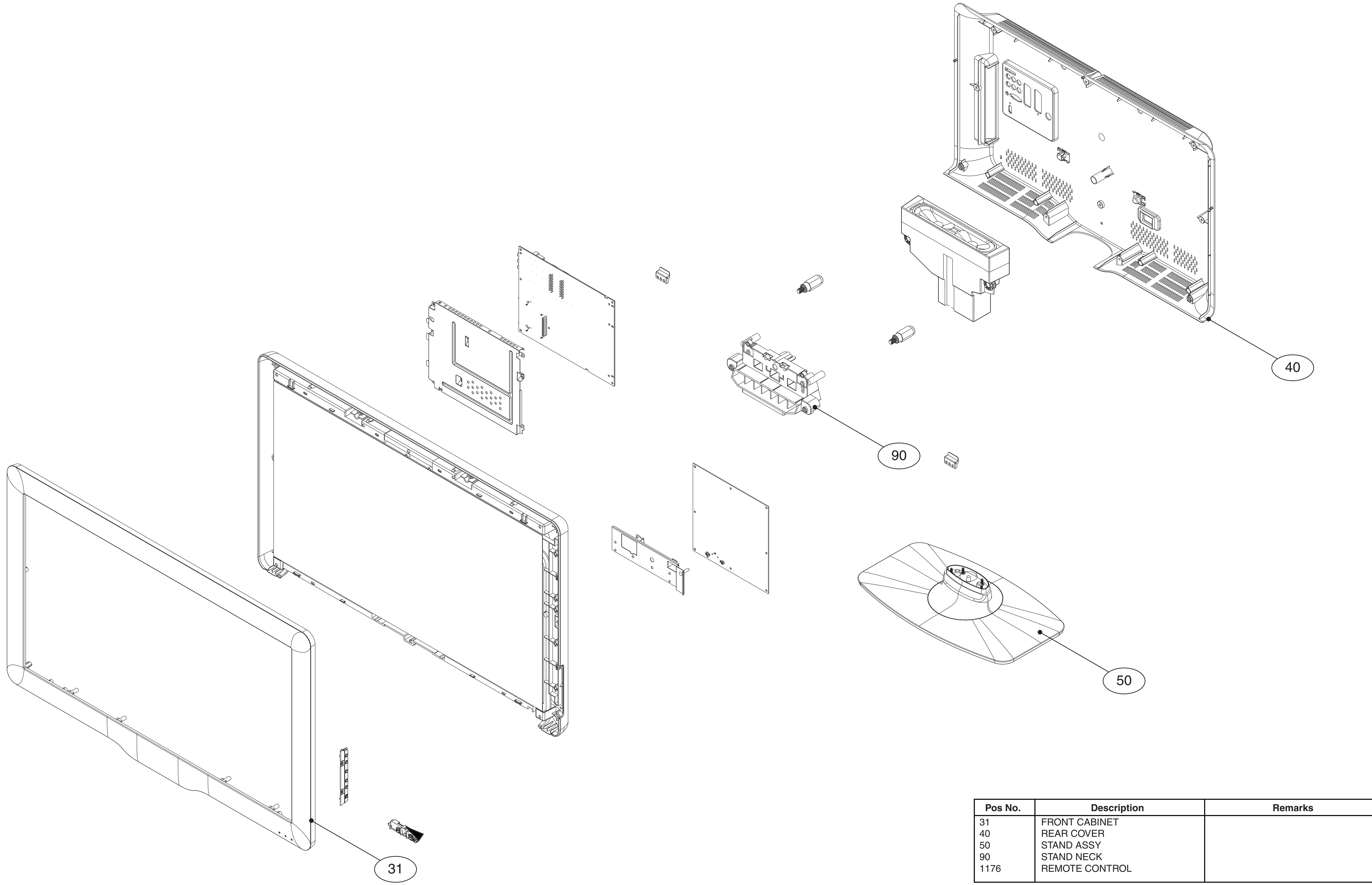
Personal Notes:

10000_012_090121.eps
090121

11. Styling Sheets

Styling Sheet 32"

DALI 32"



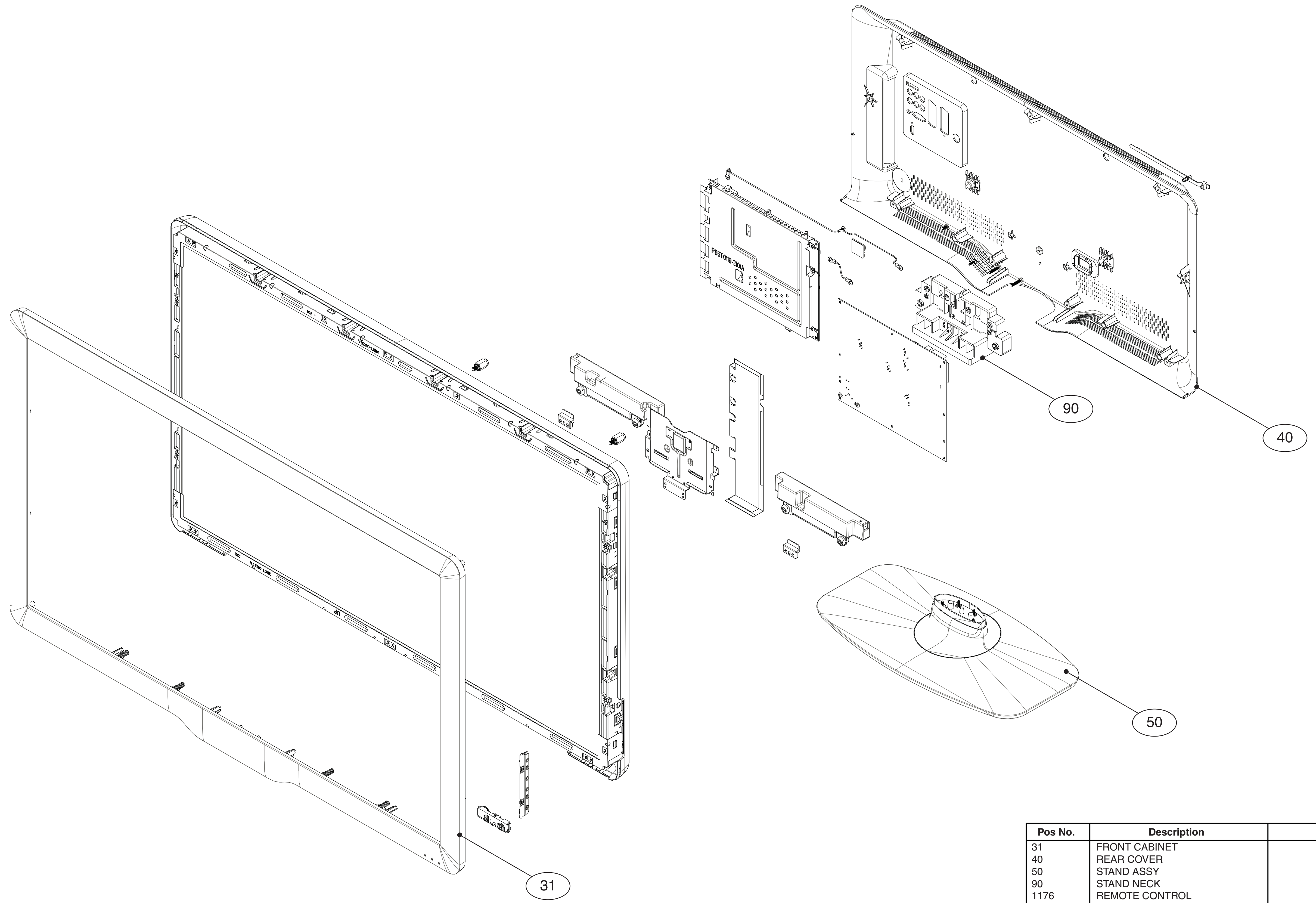
Pos No.	Description	Remarks
31	FRONT CABINET	
40	REAR COVER	
50	STAND ASSY	
90	STAND NECK	
1176	REMOTE CONTROL	

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9

18850_800_100309.eps
100309

Styling Sheet 42"

DALI 42"



Pos No.	Description	Remarks
31	FRONT CABINET	
40	REAR COVER	
50	STAND ASSY	
90	STAND NECK	
1176	REMOTE CONTROL	

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9

18850_801_100309.eps
100309